Samuel Billington
His Book god give
him grace there into look

Peter Cockrell His
May the 3   1792

Peter cockrell his
May the 3   1792

Jacob Shew is my name
Johnstown is my Station
Christ is my Salvation
and Heaven is my dealing
Place and When I am dead
and gone and all my bones
are Rotten Remember
me when this you See So
that I be not for gotten

Jacob Shew Wars born
in the Year of our lord
1.7.6.3 and the 15 of
April

Lodiwick D. Stevens His
Book god gives him grace
thare in to look When th
Bells for him Doith Tile
lord have marcy on his
Sure pore Sole, 1794
Lodiwick P Stevens Was
born -- July -- 24 -- 1777

Samuel C. Billington

his Book god give him grace
there into Look and when
the Bell doth for him tole
the Lord have mercy on
His Soul

Samuel Billington

His Book September 19

Amasa Stearns Anne 1772
His book bot June

E. P. Stevens book

1856

'Tis to the Press and Pen we Mortals owe
All we believe, and almost all we know:
All hail! ye great Preservers of these Arts,
That raise our Thoughts, and cultivate our Parts.

THE

American Inſtructor :

OR,

YOUNG MAN'S BEST COMPANION,

CONTAINING,

SPELLING, READING, WRITING and ARITHMETIC, in an eaſier Way than any yet publiſhed ; and how to qualify any Perſon for Buſineſs, without the Help of a Maſter.

Inſtructions to write Variety of Hands, with Copies both in Proſe and Verſe. How to write Letters on Buſineſs or Friendſhip. Forms of Indentures, Bonds, Bills of Sale, Receipts, Wills, Leaſes, Releaſes, &c.

Alſo Merchant's Accompts, and a ſhort and eaſy Method of Shop and Book-keeping ; with a Deſcription of the ſeveral American Colonies.

Together with the Carpenter's plain and exact Rule ; ſhewing how to meaſure Carpenters, Joiners, Sawyers, Bricklayers, Plaiſterers, Plumbers, Maſons, Glaſiers, and Painter's Work. How to undertake each Work, and at what Price ; the Rates of each Commodity, and the common Wages of Journeymen ; with Gunter's Line, and Coggeſhal's Deſcription of the Sliding Rule.

Likewiſe the Practical Gauger made eaſy ; the Art of Dialing, and how to erect and fix any Dial ; with Inſtructions for Dying and Colouring, and making Colours.

TO WHICH IS ADDED,
The POOR PLANTER'S PHYSICIAN.

With Inſtructions for Marking on Linen ; how to Pickle and Preſerve ; to make divers Sorts of Wine ; and many excellent Plaiſters and Medicines, neceſſary in all Families.

AND ALSO
Prudent Advice to young TRADESMEN and DEALERS.

The whole better adapted to theſe American Colonies, than any other Book of the like Kind.

By GEORGE FISHER, Accomptant.

The Fourteenth Edition, Reviſed and Corrected.

NEW-YORK :

Printed and ſold by H. GAINE, at the *Bible* and *Crown,* in *Hanover-Square,* M,DCC,LXX.

THE.

PREFACE.

I Need say but little by way of Preface, in relation to
the Usefulness of this Book, the Title Page so fully
declaring its Contents : But as a Preface is usually
expected, I must and cannot well avoid saying some-
thing with respect to its Utility.

As to the first Step of forming the young Man's Mind
for Business, viz. The being instructed in, and acquainted
with our Mother Tongue, viz. English, it must and is
acknowledged by all, to be a due and principal Qualification
in writing Business, and therefore it is necessary to be there-
with well acquainted.

Then in the next Place, to write a good, fair, free, and
commendable Hand, is as necessary in most, if not in all the
Affairs of Life, and Occurrences of Business.

The next Thing touched on, is in relation to the inditing
of some few Epistles or Letters in a familiar Stile, and on
sundry Subjects and Occasions : With Directions how to
subscribe or conclude a Letter, and also to superscribe or di-
rect Letters, according to the different Ranks and Qualities
of the Persons to whom directed : And this cannot be deny'd
but to be a Qualification fit for a young Man, and also to
others of more adult Years.

The next Accomplishment for a young Man, and largely
treated on in this Book, is that excellent Science of Arith-
metick,

metick, *both Vulgar and Decimal : Leading him by the Hand, and by easy Steps, through its whole Course.*

Again, the young Man is next shewn the ingenious Art of Book-keeping after the Italian *Manner, by way of Double Entry ; and that is an Accomplishment that capacitates him for Business in the highest Degree : Under which Head, he is also informed how to draw out or make various Sorts of Accompts or Writings, relating to Mercantile Affairs ; as Bills of Loading, Invoices, Accompts of Sales, together with authentick Examples of Bills of Exchange, with Notes concerning them ; likewise Bills of Parcels of divers Kinds ; also various Sorts of Receipts, &c. All which is expedient for a young Man to know and understand, if he would be dextrous in Business.*

Next he hath a concise Account of the several American *Colonies ; with a short but comprehensive Account of all the Arts and Sciences : An historical Table of the most remarkable Events that have happened in the World ; and an Abstract of the History of* England.

Here are also, easy, plain, and likewise curious Directions for measuring all Sorts of Planes and Solids (Arithmetically and Instrumentally) as the Works of Carpenters, Joiners, Sawyers, Bricklayers, Masons, Plaisterers, Painters, Glasiers, &c. with the Prices of their Works.

Here is likewise shewn the Methods, of extracting the Square and Cube Roots, with some of their Uses, in relation to Measuring, &c.

Also Practical Gauging of divers Kinds of Vessels, Tuns, &c. Likewise Dialling in various Kinds, with the Representation of the several Sorts of Dials, and how to beautify and adorn them.

Next are Precedents of Law Writings, as Bonds, Bills, Indentures, Wills, Letters of Attorney, &c. in great Variety, and adapted to these American *Colonies.*

Lastly, some Directions relating to the pleasant and delightful Art of Grafting and Inoculating. To which is subjoined, some Instructions to young Women how to Pickle and Preserve all Kinds of Fruits and Flowers, &c. with Instructions for making divers Sorts of Wines of English
Growth ;

Growth; and also for preparing many excellent *Medicines*, *Plaisters*, &c. with several good *Prescriptions* of proper *Use* against most *Distempers*: Fit for, and necessary in, all *Families.* The *whole* of that useful little *Tract*, intitled, The Poor Planter's Physician.

To the whole is added, some prudential Advice to a young *Tradesman or Dealer*, which, if observ'd, may, with God's *Blessing*, make his *Fortune*.

In the British *Edition* of this *Book*, there were many *Things* of little or no *Use* in these *Parts* of the *World*: In this *Edition* those *Things* are omitted, and in their *Room* many other *Matters* inserted, more immediately useful to us *Americans*. And many *Errors* in the *Arithmetical Part* are here carefully corrected.

<div align="right">VALE & FRUERE.</div>

INSTRUCTIONS

FOR
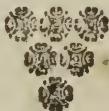
YOUTH,

To Spell, Read, and Write

TRUE ENGLISH.

The Use of Great and Small Letters; how to divide them into Vowels and Consonants; what Diphthongs are, their Numbers, and how pronounced and written.

THE Subject Part of this Book being to instruct Young (as well as Old) People, in the general Rules of Business and Conversation thereunto belonging, the first Step I shall take for forming the Mind for Business, is that most necessary Accomplishment, the Spelling and Writing good and proper *English*; for let a Person write never so good a Hand, yet if he be defective in Spelling, he will be ridiculed and contemptibly smiled at, notwithstanding his fair Writing; and which will, indeed, make his Orthographical Faults be more conspicuous. But to the Matter.

First, We are to take Notice, that of Letters are made Syllables, of Syllables Words, and of Words, Sentences, &c.

The Letters are in Number 24; to which if you add *j* and *v* Consonants, being of a different Shape and Sound from the rest, they make 26. As to the Letters, we are to observe their Names, their Form, and their Force: Their Names, whereby to know them; their Form, whether great or small; and their Force in Pronunciation or Utterance.

Letters

Letters are diſtinguiſhed, according to their Sound, into Vowels and Conſonants: A *Vowel* is a Letter that ſoundeth by itſelf, and they be five in Number, *viz. a, e, i, o, u,* and *y,* the Greek Vowel; which alſo is a Vowel in *Engliſh,* when it cometh after a Conſonant, and hath the Sound of *i* ; as in *by, fly, reply,* &c. A *Conſonant* is a Letter that ſoundeth not, except it be joined with a *Vowel,* for without one of the Vowels no Syllable can be made; as, *b, c. d. &c.* without the Aid of a *Vowel,* make nothing : So that *Vowels* and *Conſonants* may be compared to *Nouns Subſtantive* and *Nouns Adjective,* each requiring the other's Aſſiſtance. Though we have 24 Letters, and 6 of them *Vowels,* yet we have 21 *Conſonants* ; for *j, v,* and *y,* when they are ſet before any *Vowel,* in the ſame Syllable, become *Conſonants* ; as was ſaid before concerning *y* ; as in *Jupiter, Juno, Jilt, vulgar, violent, vigour,* &c. *Note,* That *j* Conſonant hath the Sound of *g,* as in *join, jangle, jingle,* &c.

When two *Vowels* come or meet together in a Word, and are not parted in the Pronunciation, but united in one Sound, ſuch are called *Diphthongs* ; being 13, *viz. ai, ei, oi,* and *ui, au, eu, ou, ee, oo, oa, eo, oa,* and *ei,* ; as in *maid, faith, either, join, aul, eunuch, ſtout, feed, ſeed, food, bread, ſtealth, wealth, people, ſteeple, boat, goat, heat, beat, feat, friend, field,* &c. *Note,* That in the firſt 7 Words, both *Vowels* are ſounded ; but in the other 15, one of them is ſcarcely heard.

There are alſo thoſe that are called *Triphthongs,* where three *Vowels* meet in one Sound, as in *Beauty, Beau, Lieu,* and *View* : Likewiſe *ay, ey, oy, uy, aw, ew,* and *ow* become *Diphthongs,* at the End of Words, but are called *improper Diphthongs* ; as in *ſay, key, joy, ſaw, bow,* &c.

Of Letters Great and Small, and when to be uſed.

FIRST Negatively, *Great Letters* are not to be uſed in the Middle or latter End of a Word, except the whole Word be ſo written, as JEHOVAH, LORD, or Titles of Books, &c. For it would be very abſurd to write thus : To Mr. geoRgE RoGeRs In thaMes StReEt.

1ſt, *Great Letters,* or *Capitals,* are written at the Beginning of Sentences ; as, Fear God, Honour the King. Know when to ſpeak, and when to hold your Tongue.

2dly, After every Period, or Full Stop, when new Matter begins. As, Some Time after that Accident, another followed,

lowed, which was this, &c. London, May 16. Turin, June 12, &c.

3dly, All Proper Names of Persons, Places, Ships, Rivers, &c. are to begin with a Capital; as, *George*, *London*, the *Dreadnought*, *Thames*, *Severn*: All Christian Names and Surnames, both of Men and Women, must begin with a Great Letter; as, *Samuel Sharp*, *Mary Sweeting*, &c.

4thly, The more eminent Words in a Sentence; as, Faith is the Foundation of the Christian Religion; or, any Word that we have a particular Regard or Deference for; as, *God*, *Christ*, *King*, *Queen*, &c.

5thly, At the Beginning of every Line in Poetry; as,
   Improve your Time : Time passeth quickly on ;
   Nor doth so good succeed, as that that's gone.

6thly, All Names of Arts, and Sciences, and Trades; as, *Writing*, *Arithmetick*, *Geometry*, *Musick*, *Carpenter*, *Smith*, &c. And evermore the Personal Pronoun *I*, and the Interjection *O*, must be Capitals.

For it is ridiculous to write thus; *On Monday last i came to your House, but you was not at Home ; then i went*, &c.

Lastly, I think I may venture to give a general Rule when Capitals are to begin Words, which is this ; All Nouns Substantive may begin with a great Letter ; and a Substantive may be known by the Signs either of *A*, *An*, or *The*, before them ; as, *a House, a Mill, an Ox, an Ass, the City, the River*, &c. And I think the Adjective (which declares what Sort of a Thing the Substantive is) may be with a Small, and the Substantive with a Great Letter ; as, *the white Horse the long Rope, brown Bread, fat Beef*, &c.

Small Letters are commonly written in all other Places, as Verbs of the Active and Passive Voice, &c.

Observations concerning the Sound of Letters, and which are omitted in Pronunciation.

A Is not sounded in *Pharoah*, nor in *Sabbaoth*, but as if written *Pharo* and *Sabboth* ; neither in *Marriage*, but as *Marrige*, also *Parliament*, as *Parliment*, and *Chaplain*, as *Chaplin*, &c. In some proper Names it is not sounded, but drop'd in the Pronounciation ; as in *Aaron, Isaac, Canaan, Balaam*, which are pronounced as if written, *Aron, Isac, Canan, Balam* ; but we must except *Ba-al*, and *Ga-al*. *A* is sounded broad like *aw*, in Words before *ld* and *ll* ; as in *bald, scald, ball, wall, fall*, &c.

B is not founded in *thumb, dumb, plumb, lamb, doubt, debt, ſubtle,* &c. but founded as if written *thum, dum, plum, lam, dout, det, ſettle.*

C is founded hard like *K,* before *a, o,* and *u,* and before *l* and *r;* as in theſe Words, *cane, came, comb, cub, clay, crane, crab;* and ſoft in *cement, city,* and *tendency; C* loſeth its ſound in *ſcene, ſcience,* and *victuals,* and in *verdict,* likewiſe in *indict, indictment;* alſo before *k,* as in *ſtack, rack, ſtick, thick, brick.*

Ch is founded like *K,* in Words of Foreign Extraction, and in many proper Names of the holy Scripture; as in *Chorus, Chymiſt, Chryſoſtom, Chriſt, Chederlaomer, Baruch, Archippus,* &c. *Ch* in *French* Words found like *ſh,* as in *Chevalier,* pronounced as *Shevalier: Machine* as *Maſheen. Mareſchal* as *Marſhal, Capuchin* as *Capuſheen, Chaiſe* as *Shaze,* &c.

D is not founded in *Ribband,* nor in *Wedneſday,* but pronounced as *Ribbin,* and *Wenſday;* the Termination *ed* is ſhortened into *t,* as *burned, burnt, choacked, choakt; ripped, ript; paſſed, paſt; choped, chopt;* &c.

E is not founded in *heart,* neither in *hearth,* or *dearth,* &c. and ſeldom heard but in Monoſyllables; as in *me, he, ſhe, ye, the,* &c. where it hath the Sound of *ee;* but in Words, derived from the *Hebrew* and *Greek, e* hath its perfect Sound as *Jeſſe, Jubile, Mamre, Nineve, Candace, Cloe, Eunice; Penelope, Salmone, Phebe, Epitome, Cataſtrophe, Gethſemane,* and from the *Latin, ſimile,* and *premunire,* &c. *E final,* or *e* at the End of a Word, ſerves to lengthen the Sound, and to diſtinguiſh it from other Words without *e,* which are founded ſhort; as in theſe Examples following, *viz. Cane, can; bite, bit; lite, bit; fare, far; hope, hop; made, mad; mane, man; ſcrape, ſcrap; ſtae, ſtar; tune, tun; write, writ;* &c. And in Words of more than one Syllable, lengthens the Sound of the laſt Syllable, but doth not increaſe the Number of Syllables; as, *admire, demiſe, blaſpheme,* &c. *E* lengthens the Syllable in *Tyre, Konite,* and *Shu-la-mite, E* muſt not be made to lengthen a Syllable, when it is made ſhort by two Conſonants; as in *paſs, turn, black;* not *paſſe, turne, blacke.* Words ending in *cre, gre,* and *tre,* found the *e* before the *r,* as in theſe Words; *acre, lucre, centre, ſepulchre, tygre, maugre, mitre, luſtre;* which are founded as if written *aker, luker, ſenter, ſepulker, tyger, mauger, mitter,* and *luſter. E final,* when not founded, ſerves to ſoften *c* and

g, as in *ace, place, lace, spice, truce, oblige, huge, age,* &c. If Nouns in *e final* take *s* after them with an Apostrophe before it, it stands for *his*, as the *Pope's Eye*, or the *Eye of the Pope*. If without an Apostrophe, it makes the Plural Number, as *Tables*. E must be joined to long *s* in these Words; *Horse, Nurse, Purse*; not *Hors, Nurs,* or *Purs*. If to *e* at the End of a Word, a long Vowel be added, the *e* is to be omitted, as in *writing, loving, doing,* &c. not *writeing, loveing,* or *doeing*; except the Terminations *ge* and *ce* before *able*, as in *charge-able, peace-able,* &c. E must not be written after a Diphthong, in these Words; *vain, maid, gain, fear, gnaw,* &c. *not vaine, maide, gaine,* &c.

F in Plurals is changed into *v*, as, *strife, strives, staff, staves*.

G is not sounded in *sign, reign*, neither in *gnaw, gnat, assign, design, seignior, seraglio, phlegm,* &c. but sounded as if *senior, seralio, fleme*. G is sounded soft in *gender, ginger,* and *gipsy*; but hard in *Gibeon, Giberah, Gilboa, Geth-semane,* and hard also in these proper Names, *Gibson, Gilman,* and *Gilbert*; and likewise in these common Words; *gelt, geld, gird, gimp, geese, gander, gabble, gather, gild,* &c. Observe, That if G be hard with a long Vowel, *ue* is joined and pronounced in the same Syllable; as in *Plague, Prague, Hague, rogue, league, dialogue, catalogue,* &c.

Gh in the End of some Words, where *au* or *cu* goes before, hath the Sound of *ff*, as in *tough, rough, cough, laugh,* sounded as if *tuff, ruff, coff, laff*; but *huff, cuff, snuff,* and *buff*, must be so written.—Gh is not sounded in *mighty, though, through,* neither in *daughter,* or *Vaughan*.

H hath Place, but no sound, in *Chrystal, Chronicle, Christ, Ghost, John, Rhine, Schedule,* and *Schism*. H is not sounded at the End of Words, if it be alone, without *t* or *c* before it, as, *snatch, watch,* &c.

I is not sounded in *adieu, juice, venison, fruit, bruise, Salisbury*; but sounded like *ee* in *oblige, Magazine,* and *Machine,* &c. I is sounded long in proper Names ending in *iah, Jeremiah, Hezekiah*; but short in *A-ri-el* and *Me-ri-am*.— The tail'd *j*, or Consonant, hath been spoke of before.

K is nearly allied in sound with *C*; but to know when to use one, and when the other, *Note*, that *C* hath the Force of *K* only before *a, o, oo,* and *u,* and these two Consonants *l* and *r*; and therefore we must not write, *kare* for *care, koou* for *cow, krown* for *crown*; and the use of *K* is only before

before *e*, *i*, and *n*; wherefore we must write *keep*, *key*, *knight*, *kill*, &c. not *ceep*, *cey*, *cnight*, nor *cil* : We must write *Calendar*, *Catherine*, rather than *Kalendar*, or *Katherine*.

L is not sounded in *calf*, *half*, *chalk*, *stalk*, *walk*; but pronounced as if *cafe*, *hafe*, *chalke*, *staulk*, *wauk*. Neither is *l* pronounced in *Bristol*, *Holbourn*, *Lincoln*, *Salmon*, or *Chalron*; but sounded as if writ, *Bristow*, *Hoburn*, *Lincon*, *Sammon*, and *Chaudron*; nor in *Colonel*, where the first *l* hath the Sound of *r*, as *Curnel*.

M hath the Sound of *n*, in the Word *accompt*.

N is not heard in *autumn*, *lime-kiln*, *solemn*, *limn*, *hymn*, *column*, nor in *condemn*.

O is not sounded in *people*, *feoffe*, *bason*, *mutton*, and lost also in *yeoman*, *mason*, *righteous*, *bacon*, *jeopardy*, and *crimson*. *O* sometimes sounds like *oo*, as in *doing*, *moving*, *proving*, &c. *O* is not heard in *coroner*, *damosel*, *Nicholas*, *carrion*, nor in *chariot* ; but pronounced as if writ *crowner*, *damsel*, *Nicklas*, *carrin*, and *charrit*——*O* is sometimes sounded like *i*; as in *women* and *flagon*, pronounced as if *wimmen* and *flaggin*. And sometimes *O* is sounded as *u*, as in *corduit*, *conjure*, *attorney*, [and *Monmouth*, being heard as if writ *cundit*, *cunjure*, *atturney*, and *Munmouth*.

P is written, but not sounded, in *empty*, *presumptuous*, *psalm*, *sumpter*, *accompt*, *attempt*, *psalter*, and *symptom* ; also in *sumptuous*, *contemptuous*, *receipt*, and *consumptive*, &c.

Ph have the sound of *f*, when together in one Syllable ; as in *philosophy*, *phisician*, *Asaph*, and *elephant*, but we must not write *filosophy*, *fisitian*, nor *Asaf*, or *elefant*. *Ph*, are parted in *shep-herd*, *up-hold*, and in *Clap-ham*, and other such compounded Words.

Q. After *Q* always follows *u* in all Words ; and in *French* Words it hath the Sound of *k* ; as in *risque*, *liquor*, *catholique*, *banquet*, *conquer*, *masquerade*, *chequer* ; pronounced as *risk*, *likker*, *catholic*, *banket*, &c.

S is not sounded in *island*, *viscount*, or *isle*, nor in *Lisle*, but pronounced as *iland*, *vicount*, *ile*, and *Lile*.

There be two Sorts of *s*'s, the long *ſ*, thus *ſ*; and the little *s*, thus *s*; the long *ſ* in the Beginning and Middle of Words, (but never at the latter End) and the short or small *s*, at the latter End of Words, and sounds *hard* like *z*, in all the Words of the plural Number, and in Words of the third Person ; as *games*, *worms*, *he reads*, *she bears*. *S* sounds

hard

hard, in Words that terminate in *ſion*, as in *circumciſion, evaſion, deluſion*; but after a Conſonant *ſoft* as in *converſion, commiſſion, dimenſion*. S is likewiſe ſounded hard in theſe Words, *raiſe, praiſe, chaiſe, cheeſe, theſe, compreſe, expoſe, bruiſe, refuſe, applauſe, pauſe, clauſe, wiſdom, caſement,* and *damſel.*——I do not think it any very great Abuſe, to have the ſmall *ſ* ſometimes in the Beginning or Middle of a Word, as well as at the latter End; eſpecially if a *t* follow it, thus *ſt*.

Th ſounds *fine* in *thin, think,* and *wrath*; and is ſounded hard in *thee, then, they, that, blythe, tythe,* and *ſithe*; alſo in *mother, brother, hither, thither*; and in *loath, cloath,* and *cloathier, &c.*

Ti before a Vowel or Diphthong, hath the Sound of *ſi*; as in *patience, dictionary, gratian, oblation, notion, tranſlation*; except when *ſ* goes juſt before it, as in theſe Words, *queſtion, fuſtian, baſtian, combuſtion,* and *celeſtial,* and alſo *beſtial, &c.* In ſome Words of *Hebrew* and *Greek,* *ti* retains its natural Sound; as in *Shealatiel, Phaltiel, Shephatiah, Cotittia, Adramyttium,* and the like; and in *mightier* and *mightieſt, emptieſt, emptied*; and from *pity,* we ſay *piti-able.*

U is ſounded like *i* in *bury, birry, buzy, bizze*; *buſineſs,* as *bizzneſs.*

W is not ſounded, though written, in *anſwer, ſword, whore,* nor in *ſwooning away,* neither is it heard in *wrap, wrath, wrong, wretch, wreath, wrangle, wriggle*; but pronounced as if *ford, hore, ſouning,* and hath the Sound of *R* in the laſt ſeven Words, *viz. rap, rath, rong, &c.*

Wh belongs to Words purely *Engliſh*; as *what, when, where* and *wheel.*

X is ſounded as *z*, in *Xenophon, Xerxes, Xenocrates,* and *Xantippe.*

Y is either a Vowel or Conſonant, as hinted before. A *Vowel,* in *my, by, fly, thy,* and ſometimes when a *Vowel,* it hath the Sound of *ee,* as in *worthily, chriſtianity, liberty, formerly, formally, Normondy* and *Dorothy.* *Y* is a *Conſonant* when it begins a Word, as in *yet, you, yonder, younger,* and *yeſterday.*

Z hath its proper Sound, in *Zeno, zeal, zealous,* and in *Zenobia.* It hath the Sound of *ſ* in *Elizabeth, ſize, prize,* and *Melchizedeck*; the firſt of which Words hath been formerly, and ſometimes now is writ with an *ſ,* thus *Eliſabeth.*

Thus

Thus far for the found of Letters fingle ; and now I fhall give a few Notes concerning two Letters, when they are united in one Sound, called *Diphthongs* ; and firft of

Ai and *Ay*. Thefe have the found of *a*, in *air, fair, fair, may, flay, play* ; but *a* is loft in *Calais*, (a Town of *France)* and pronounced feparately in *Sinai*, (a Mountain of *Arabia)*.

Ei and *Ey*, are founded in *eight, ftreight, fleight*, and *heyday !* and are pronounced as *e*, in *key, veil*, and *convey* ; but *eye* muft be excepted : And *ei* is founded as *a*, in *neigh-bour*, and *heir*, being pronounced as *nabor* and *are*.

Oi and *Oy* have a Sound peculiar to themfelves ; as in *oil* and *oyfter* ; but make no Diphthong in *going* or *doing*.

Au and *Aw* commonly keep a proper Sound ; as in *augur, auftere, daw, maw, faw*, &c. but *au* is loft in *aunt*, and *gauger*, being founded as *ant* and *gager* ; likewife is not heard in *Em-ma-us*, and *Ca-per-na-um*.

Eu and *Ew* have an united Sound in all Words, as in *feud, brew, new*, and *grew* ; but *eu*, is no Diphthong in *Zac-che-us*, or in *Bar-ti-me-us*.

Ou and *Ow*. *Ou* is expreffed in *foul, foul, proud, loud* ; and *ow* in *bow, cow*, and *now* ; but *ou* founds like *oo*, in *foup* (a French Dish) *Stroud*, (a Town in *Kent)* and *Cowper*, (a Man's Name) founded as if *foop, Strood*, and *Cooper*.

Ee is no Diphthong in *Be-e-rites, Be-er-fhe-ba*, and in *Be-el-ze-bub*, one of the *e*'s is dropt in Pronounciation ; neither in Words beginning with *re*, or *pre*, as *re-enter, pre-e-mi-nence*.

Oo is properly founded in *cool, fool, pool*, and *tool* ; but hath the Sound of *u* in *root, foot*, and *foot* ; and makes no Diphthong in *Co-os, co-c-pe-rate*.

Ea founds like *a*, in *fea, pea, feam*, and *team* ; and hath the found of *e* in *bread, head, lead, dead, fearch, leather, feather, heaven*, and *leaven* ; but is no Diphthong in *ven-ge-ance, mif-cre-ant*, or any *Hebrew, Greek*, or *Latin* Words ; as in *Ka-defh, Bar-ne-a, Kir-jath-je-a-rim*, nor in *Ce-fa-re-a, i-de-a*, or *o-ce-an* ; neither in *re-al, be-a-ti-tude, cre-a-tor* ; but except *creature* ; nor in Words beginning with *pre*, as *pre-amble*, &c.

Oa is founded as *o* in *goat, boat*, and *coat* ; and founded broad as *au*, in *broad* and *great* ; but is no Diphthong in *Goa*, (a City in *India)* or in the *Hebrew* Words *Zo-an, Zo-ar*, and *Gil-bo-a*.

Is

Ie before a single Consonant, sounds like *ee*, as in *brief*, *chief*, and *thief*; but if before two Consonants, it sounds like *e*; as in *friend*, *field*; but at the End of *English* Words, *e* final is not heard, as in *die*, *signifie*, and is no Diphthong in *A-bi-e-zer*, *Eli-e-zer*, nor in the *English* Words *di-er*, *car-ri-er*, or *clo-thi-er*; and in Words derived from the *Latin*, *ie* is parted, as in *cli-ent*, *o-ri-ent*, *qui-et*, and *sci-ence*.

Ui is sounded as *u* in *juice*, *fruit*, and *suit*; but *u* is lost in *conduit*, *build*, and *guise*, and is no Diphthong in *je-su-it*, *ge-nu-in*, or *fru-i-ti-on*.

Æ and *OE* be no *English* Diphthongs, but are used in *Æsop*, *Æneas*, *Ætna*, *Cæsar*, *Oedipus*, and *Oeconomy*; but in common Words they are neglected; as in *equity*, *female*, and *tragedy*, tho' derived of *æquitas*, *fœmina*, and *tragædia*.

Of Syllables, and their Division, being the Art of Spelling.

A *Syllable* is a taking Letters together, and uttering them in one Breath, as *vir-tue*; so that *virtue* being thus divided, or taken asunder, makes two *Syllables*, viz. *vir* and *tue*, which put together, form the word *virtue*. And many times a Vowel, or a Diphthong, of themselves, make a *Syllable*; as in *a-bate*, *e-ve-ry*, *i-dle*, *o-ver*, *u-su-rie*; so of Diphthongs, as *au-ger*, *Eu-stace*, *ow-ner*, *ai-der*, *oy-ster*, *Ea-ton*, *oa-ten*: By which we may particularly note, That no *Syllable* can be made, be there never so many *Consonants*, or so few, without the Aid of a *Vowel* or *Diphthong*.

The longest *Monosyllables* we have in *English*, are *length*, *strength*, and *streights*; which still would be nothing, without the Vowel *e* and *i*.

All Spelling may be taken in, under these four following general Rules, or Heads.

1*st*, When a *Consonant* comes between two *Vowels* in dividing the Word into *Syllables*, the *Consonant* is joined to the latter Vowel; as in *sta-ture*, *na-ture*, *de-li-ver*, *u-ni-ty*, &c. except compound Words, which terminate in *ed*, *en*, *est*, *eth*, *er*, *ing*, *ish*, and *ous*; as *coasted*, *gild-en*, *know-est knoweth*, *bear-er*, *fooling*, *bar-ba-rous*, *ra-ven-ous*, and *jab-w-bs*.

2*dly*, When two *Consonants* come together in the Middle of a Word, they are to be parted if not proper to begin a Word; as *num-ber* *stran-ger*, *for-tune*, &c. not *numb-er*, *strang-er*, *fort-une*: To this Rule is excepted, Words with *x* as *ox-en*, *ex-er-cise*, &c. When the same Consonant is doubled

in

in a Word, the first belongs to the foregoing, and the latter to the following Syllable, as in the Rule above, and in these words, *Ab-ba, ac-cord, an-no, ad-der, &c.*

3dly, *Consonants* that can begin Words, must not be parted in the Middle; as *a-gree, be-stow, re-frain, &c.* not *ag-ree, bes-tow, ref-rain.*——These *Consonants* may begin Words, *viz. bl, br, ch, cr, dr, dw, fl, fr, gh, gl, gr, kn,* &c. as *blunt, break, chaw, cry, draw, dwell, flesh, ghost,* &c. On the Contrary, *Consonants* that cannot begin Words, must be parted in the Middle, as in *Sul-tan,* and as said above.

4thly, When two *Vowels* come together, not making a Diphthong, they must be divided; as in *vi-al, va-li-ent, Li-onel, du-el, cru-el, me-te-or,* and *La-o-di-ce-a.*

Some particular Notes.

L is doubled in Words of one Syllable, as *well, tell, swell, hall, wall, fall, will, bill, mill,* &c. But in Words of more than one Syllable, the Word always terminates with single *l,* as *angel, Babel, hurtful, dutiful,* and *beautiful.* Neither must *l* be doubled in *alway, also, although;* not *all-way, all-so, all-though,* &c. But Words accented on the last Syllable, must be excepted from the Rule above, *viz. install, recall, inroll, rebell,* and *repell.*

Y must be used before the Termination *ing,* as *buying, lying, carrying, marrying, paying, slaying, burying,* &c.

The long *f* must never be used at the End of a Word, or immediately after the shorter or small *s.*

X should be used instead of *ct,* where it appears to have been in the Original; as *reflexion, connexion,* rather than *reflection,* or *connection,* &c.

Remember, that if you cannot write out the whole Word at the End of the Line, break it off at the End of a Syllable, thus——————————————————con-demn; not thus——————————————cond-emn: Again——————————————dif-charge; not——————————————disc-harge.

C must not be put between two *Consonants;* as *think,* not *thinck; thank,* not *thanck; brink,* not *brinck;* but if a Vowel goes before *c,* you must write *c* before *k,* as *brick, stick, thick,* &c.

E final must not be placed after a Syllable made long by a Diphthong, as *rain,* not *raine; brain,* not *braine; re-strain,*

ſtrain, not *reſtraine*, &c. Neither is it neceſſary after a double Conſonant, as *inn* and *add*; not *inne* or *adde :* But we muſt except *Anne,* a Chriſtian Name, and *Donne,* a Sur-name ; and alſo *Deale,* the Name of a Town in *Kent.*

Ph muſt be retained in Words of a Foreign Original ; as *phancy, prophet* ; not *fancy, profet.*

U follows *Q* in all Words, as was ſaid before.

Q is better than *C,* in ſome Words from the *Latin,* as *oblique, antique, relique,* rather than *oblike, antike,* or *relike,* Alſo *paquet, riſque, traffique,* and *Fabrique,* from the *French.*

K is by ſome thought unneceſſary in Words of Foreign Extraction, *viz.* arithmetic, muſic, logic, public, catholic, and *phyſic* ; rather than *arithmetick,* &c.

Of *S* and *C.* Some People may eaſily drop into Error by miſtaking *S* for *C,* as in the Beginning of the follow-ing Words, where *C* hath the perfect Sound of *S,* though *C* muſt undoubtedly be written, *viz.* in

Ceiling	Cinnamon	Cell	Ceruſs
Celeſtial	Ceremony	Cenſer	Centre
Civet	Cellar	Celerity	Cinque
Certain	Cenſure	Cypreſs	Cypher
Cymbal	Cenſor	Circle	City
Ciſtern	Ceaſe	Circuit	Citron
Centurion	Celebrate	Cement	

But theſe Words muſt be written with *S, viz.*

Science	Sceptre	Scarcity	Sciatica
Schedule	Scheme	Schiſm	Scythian

When to write *ti,* and when *ſi*——*viz.*

with ti.	with ſi.
Contention	Confuſion
Action	Occaſion
Contradiction	Contuſion
Attention	Oppreſſion
Benediction	Alluſion
Apparition	Aſcenſion
Concoction	Averſion
Declaration	Aſperſion
Ambition	Commiſſion
Contrition	Comprehenſion
Oration	Circumciſion
Oblation	Concluſion

Theſe

Theſe Words ſpell thus.

Paſſion, *not* paſhon	Saliſbury, *not* Salſbury
Faſhion, *not* Fation	Leiceſter, *not* Leſter
Cuſhion, *not* Cution	Shrewſbury, *net* Shrofbury
Glouceſter, *not* Gloſter	Carliſle, *not* Carlile
Worceſter, *not* Worſter	Weſtminſter, *not* Weſtmiſter.

Another Qualification in Spelling, is rightly to diſtinguiſh Words of the *ſame Sound*, though widely different in their Senſe and Signification : Such as theſe that follow, *viz.*

A

A Bel, Cain's Brother
Able, to do a Thing
A Bell, to ring
Accidents, Chances
Accidence, a Book
Acre, of Land
Acorn, of an Oak
Achor, a Valley of that Name
Advice, Counſel
Adviſe, to council
Account, Eſteem
Accompt, of Reckoning
Ale, a Drink
Ail, Trouble
All, every one
Awl, for Shoemakers
Alley, a narrow Place
Ally, a Friend or Confederate
Allay, to give Eaſe
Alloy, baſer Metal
Altar, for Sacrifice
Alter, to change
Ale-hoof, an Herb
Aloof, at a Diſtance
Allow'd, approv'd
Aloud, to ſpeak ſo
Amiſs, wrong
A Miſs, or Miſtreſs
Ant, a Piſmire
Aunt, a Father's Siſter
Anchor, of a Ship
Anker, a Rundlet

A Peal, of Bells
Appeal, to higher Powers
Appear, to be ſeen
A Peer, a Lord
Aray, good Order
Array, to cloth
A Roſe, to ſmell to
Aroſe, did riſe
Are, they be
Heir, to an Eſtate
Arrant, notorious
Errand, a Meſſage
Arrows, to ſhoot
Arras, Hangings
A Scent, or Smell
Aſcent, a going up
Aſſent, Agreement
Aſſiſtance, Help
Aſſiſtants, Helpers
Augur, a Soothſayer
Augre, to bore with
Ax, to cut with
Acts, of Parliament
Auſtere, ſevere
Oyſter, a Shell Fiſh

B

Babel, the Tower
Babble, to prate
Bacon, Hog's Fleſh
Baken, in the Oven
Beckon, to make a Sign
Bail, a Surety
Bale, of Goods

Bald,

Bald, without Hair
Bawl'd, cry'd out
Ball, to play with
Bawl, to cry aloud
Barbara, a Woman's Name
Barbary, in Africa
Barberry, a Fruit
Bare, naked
Bear, a Beast, or to bear
Bays, of Bay Trees
Baize, Cloth of Colchester
Base, Vile
Bass, in Music
Belly, Part of the Body
Belie, to speak falsly
Be, they are
Bee, that makes Honey
Beer, to drink
Bier, to carry the Dead on
Bell, to ring
Bel, an Idol
Berry, a small Fruit
Bury, the Dead
Blue, a Colour
Blew, as the Wind
Board, a Plank
Bor'd, a Hole
Boar, a Beast
Bore, to bore
Boor, a Country Fellow
Bold, Confident
Bowl'd, at the Jack
Bolt, the Door
Boult, the Meal
Bow, to bend, or the Bow
Bough, of a Tree
Boy, a Lad
Buoy, of an Anchor
Bread, to eat
Bred, brought up
Breeches, to wear
Breaches, broken Places
Bruit, a Report

Brute, Beast
Burrow, for Coneys
Burrough, a Corporation
By, near
Buy, with Money
Brews, he breweth
Bruise, a Hurt
Brewis, of Fat and Bread

C

Cain, that kill'd his Brother
Cane, to walk with
Caen, in Normandy
Calais, in France
Chalice, a Cup
Call, by Name
Cawl, or Suet
Cannon, a great Gun
Canon, a Church Rule
Capital, great or chief
Capitol, a Tower in *Rome*
Career, full Speed
Carrier, of Goods
Cellar, for Liquors
Seller, that felleth
Censer, for Incense
Censor, a Reformer
Censure, to judge
Centaury, an Herb
Century, an hundred Years
Centry, or Sentinel, a Soldier on Guard
Chair, to sit in
Chare, a Job of Work
Champaine, Wine of *France*
Champaign, a wide Field, or Summer's Expedition
Choler, Rage or Anger
Collar, of the Neck
Coller, of Beef or Brawn
Cieling, of a Room
Sealing, with a Seal
Cittern, for Music
Citron, a Fruit

Clerk,

Clerk, a Clergyman
Clerk, of a Parish
Clause, Part of a Sentence
Claws, of a Beast or Bird
Coat, a Garment
Cote, for Sheep
Comb, for the Hair
Come, hither
Commit, to do
Comet, a blazing Star
Common, usual
Commune, to converse
Condemn, to Death
Contemn, to despise
Council, of the King
Counsel, Advice
Cou'd, or could
Cud, to chew as Beasts
Current, a passing or running Stream
Courant, a Messenger or News Paper
Currants, Fruit
Crick, in the Neck
Creek, of the Sea or River
Cousin, a Relation
Cozen, to cheat
Cymbal, a musical Instrument
Symbol, a Mark or Sign
Cypress, a Tree
Cyprus, an Island
Cruse, for Oil
Cruize, by the Sea Coast
Cygnet, a young Swan
Signet, a Seal

D

Dane, of Denmark
Deigne, to vouchsafe
Dam, stopping Water
Damn, to condemn
Dame, a Mistress
Dear, of Price
Deer, in a Park

Deceased, dead
Diseased, sick
Decent, becoming
Descent, going down
Dissent, to disagree
Deep, low in the Earth
Diep, a Town in *France*
Defer, to put off
Differ, to disagree
Derbe, a City of *Asia*
Derby, a Town of *England*
Desert, Merit
Desart, a Wilderness
Dew, a falling Mist
Due, owing
Do, to make
Doe, a female Deer
Dough, Paste
Don, a *Spanish* Lord
Done, acted
Dun, a Colour
Dolphin, a Fish
Dauphine, the *French* King's eldest Son
Devices, Inventions
Devizes, in *Wiltshire*
Doer, that doeth
Door, of a House
Dragon, a Beast
Dragoon, a Soldier
Draught, of Drink
Drought, Dryness
Dolour, Grief or Pain
Dollar, a Piece of Money
Demure, Sober
Demur, a Stop or Doubt

E

Ear, of the Head
E'er, ever
Early, betimes
Yearly, every Year
Earth, the Ground
Hearth, of the Chimney

Easter,

Easter, the Festival
Esther, a Woman's Name
Enter, to go in
Inter, to bury
Elder, not the Younger
Eldern, a Tree
Eaten, or swallowed
Eton, a Town's Name
Eminent, famous
Immenent, over Head
Enow, in Number
Enough, in Quantity
Earn, to deserve
Yarn, Woollen Thread
Yearn, to pity
Envy, or Hatred
Envoy, a Messenger
Exercise, Labour or Practice
Exorcise, to conjure
Err, to mistake
Er, Brother to *Onan,* Sons of *Judah*
Extant, in being
Extent, Distance

F

Fein, desirous
Feign, to dissemble
Fair, beautiful or a Market
Fare, Victuals
Faint, weary
Feint, a false March
Fourth, in Number
Forth, to go out
Feed, to eat
Fee'd, rewarded
Fir, Wood
Fur, or Hair
Felon, a Criminal
Fellon, a Whitlow
File, of Steel
Foil, put to the worst
Fly, as a Bird
Fly, or Insect

Fillip, with the Fingers
Philip, a Man's Name
Flower, of the Field
Flour, Meal
Floor, of the Room
Follow, to come after
Fallow, Ground not plow'd
Find, to find any thing
Fin'd, amerced
Fiend, a Devil
Flea, off the Skin, and also Vermin
Flee, to escape
Fowl, a Bird
Foul, dirty
Francis, a Man's Name
Frances, a Woman's Name
Frays, Quarrels
Froize, Pancake with Bacon

G

Gall, of a Beast
Gaul, France
Garden, of Herbs
Guardian, an Overseer
Genteel, graceful
Gentile, a Heathen
Gentle, mild
Gesture, Carriage
Jester, a merry Fellow
Groan, with Grief
Grown, greater
Guilt, of Sin
Gilt, with Gold
Greater, bigger
Grater, for Nutmegs
Grave, for the Dead
Greave, Armour for the Leg
Guess, to imagin
Guest, one entertain'd
Gluttonous, greedy
Glutinous, sticking as Pitch
Great, large
Grate, for Coals, &c.

Graze,

Graze, to eat
Grays, a Town
Groat, Four pence
Grot, a Cave
Gallies, Ships with Oars
Gallows, for Criminals

H

Hare, of the Fields
Hair, of the Head
Harsh, severe
Hash, minced Meat
Haven, a Harbour
Heaven, a large Place of Happiness
Heart, of the Body
Hart, of the Woods, or an over-grown Buck
Herd, of Cattle
Heard, did hear
Hard, not soft, or difficult
Here, in this Place
Hear, with the Ears
High, lofty,
Hie, away, make haste
Him, that Man
Hymn, to sing
Hail, congeal'd Rain
Hale, the Ship
Hall, in a House
Haul, pull
Higher, taller
Hire, Wages
His, of him
Hiss, as a Snake, or to deride
Hoar, Frost
Whore, a lewd Woman
Hole, or Hollowness
Whole, intire
Ho! lo! to call
Hollow, to make deep
Holy, pious
Wholly, intirely
Home, one's House

Helm, wholy
Hoop, for a Tub
Whoop, or ho! lo!
Hugh, a Man's Name
Hue, of Colour
Hew, with an Ax

I

I, I myself
Eye, to see with
Idle, lazy
Idol, an Image
I'll, I will
Ile, of a Church
Isle, an Island
Oil, of Olives
Imploy, in Work
Imply, to signify
In, within
Inn, for Travellers
Incite, to stir up
Insight, Knowledge
Ingenious, of quick Parts
Ingenuous, candid
Iron, Metal
Ironie, speaking by Contraries

K

Ketch, a Ship
Catch, to take
Kill, to slay
Kiln, for Lime
Kind, good natur'd
Coin'd, Money
Knave, dishonest
Nave, of a Wheel
Knight, by Honour
Night, Darkness

L

Laid, placed
Lade, the Water
Lane, not a Street
Lain, did lie
Latin, a Tongue
Latten, Tin

Lattice,

Lattice, of a Window
Lettice, a Woman's Name
Letuce, Sallad
Leafe, of a House
Leash, three
Lees, of Wine
Leese, old Word for lose
Leaper, that jumpeth
Leper, one leprous
Lessen, to make lefs
Lesson, to read
Least, smallest
Lest, for fear
Lethergy, Sleepinefs
Liturgy, Church fervice
Lier, in wait
Lyar, that tells Lies
Limb, a Member
Limn, to paint
Line, Length
Loin, of Veal
Low, humble
Lo, behold
Lose, to fuffer Lofs
Loose, to let go
Lower, to let down
Lowr, to frown

M

Made, finifhed
Maid, a young Woman
Main, Chief
Mane, of a Horfe
Male, the He
Mail, Armour
Manner, Cuftom
Manor, a Lordfhip
Market, to buy or fell in
Mark, it, note it
Marsh, low Ground
Mash, for a Horfe, or of a Net
Martin, a Man's Name
Marten, a Bird
Mead, a Meadow

Mede, one Media
Mean, of low Value
Mein, Carriage or Afpect
Meat, to eat
Mete, to meafure
Message, Bufinefs
Messuage, a Houfe
Mews, for Hawks
Muse, to meditate
Mighty, powerful
Moiety, half
Mile, Meafure
Moil, Labour
Might, Strength
Mite, in Cheefe
Moat, a Ditch
Mote, in the Sun
More, in Quantity
Moor, a Black
Mower, that moweth
Moore, barren Ground
Morter, made of Lime
Mortar, to pound in
Mole, Vermin
Mould, to caft in

N

Nay, denial
Neigh, as a Horfe
Neither, none of the two
Nether, lower
Naught, bad
Nought, nothing
Nigh, near,
Nye, a Man's Name
Nice, curious
Niece, a Brother's Daughter
Not, denying
Knot, to tye
Note, mark
Note, of one's Hand
Nose, of the Face
Noah's Ark,

O

O

Oar, of a Boat
Ore, crude Metal
O'er, over
Off, cast off
Of, belonging to
Our, belonging to us
Hour, of the Day
Oh! alas!
Owe, in Debt
One, in Number
Own, to acknowledge
Order, Rule
Ordure, Dung

P

Pair, a Couple
Pare, cut off
Pear, a Fruit
Pattin, for a Woman
Patent, a Grant
Peer, a Lord
Pier, of *Dover*
Peter, a Man's Name
Petre, Salt
Pail, for Water
Pale, of Countenance
Pale, a Fence
Place, Room
Plaise, a Fish
Parson, of the Parish
Person, any Man
Pole, for Hops
Poll, of the Head
Pool, of Water
Pore, with the Eyes, or of the Skin
Poor, necessitous
Palate, of the Mouth
Pallet, Bed
Posy, a Nosegay
Poesy, Poetry
Power, mighty
Pour, as Water

Prey, a Booty
Pray, beseech
Profit, Gain
Prophet, a Foreteller
Practice, Exercise
Practise, to exercise
Presence, being here
Presents, Gifts
Princes, the King's Sons
Princesses, the King's Daughters
Please, to content
Pleas, Defences
Precedent, an Example
President, Chief
Principal, Chief
Principle, the first Rule

Q

Quire, of Paper
Choir, of Singers
Queen, the King's Wife
Quean, an Harlot

R

Rack, to torment
Wreck, of a Ship
Rain, Water
Reign, of the King
Rein, of a Bridle
Rays, of the Sun
Raise, lift up
Race, to run
Rase, to demolish
Rice, Grain
Rise, to get up
Red, in Colour
Read, the Book
Reed, of the Water
Relick, a Remainder
Relict, a Widow
Roe, of a Fish, or a Female Deer
Row, the Boat
Right, not wrong

Rite,

Rite, a Ceremony
Write, with a Pen
Wright, a Wheelwright
Reddish, of Colour
Radish, a Root
Rear, set up
Rear, behind
Ruff, for the Neck
Rough, not smooth
Rie, Corn
Rye, in Connecticut
Wry, crooked
Ring, the Bells
Wring, the Hands
Rime, a Fog or Mist
Rhyme, Verse
Rind, of Cheese
Rode, did ride
Road, the Highway
Rote, got by Heart
Wrote, did write
Wrought, did Work

S

Savour, Taste or Smell
Saviour, that saves
Sheep, a Beast
Ship, for the Sea
Sight, View
Cite, to summons
Sail, of a Ship
Sale, of Goods
Sink, sink down
Cinque, Five
Slow, not quick
Sloe, Fruit
Sow, Seed
Sew, with a Needle
So, thus
Slight, neglected
Sleight, of Hand
Some, a Part
Sum, of Money
Soul, or Spirit

Seal, a Fish
Sole, of a Shoe
Son, of a Father
Sun, in the Firmament
Sore, painful
Soar, aloft
Swore, did swear
Stare, to look on earnestly
Stair, a Step
Stile, to get over
Style, of Writing
Sound, whole, firm ; also Noise
Swoon, to faint away
Straight, not crooked
Strait, narrow
Succour, Help
Sucker, a young Sprig
Spear, a Weapon
Sphere, a Globe

T

Then, at that Time
Than, in Comparison
Tame, gentle, not wild
Thame, in *Oxfordshire*
Tear, to rent
Tear, of the Eye
Tare, an Allowance in Weight
Tare, a Vetch,
Tail, of a Beast
Tale, a Story
Tiles, for the House
Toyls, Nets
Toil, to Labour
There, in that Place
Their, of them
Throne, of the King
Thrown, as a Stone
Tide, a flowing Water
Ty'd, made fast
Time, of the Day
Thyme, an Herb
Team, of Horses

‡ B

Teem,

Teem, with Child
Two, twice one
To, the Preposition
Too, likewise
Toe, of the Foot
Tow, to draw
Tow, to spin
Told, as a Story
Toll'd, as a Bell
Tour, a Journey
Tower, of a Church

V

Vacation, Leisure
Vocation, a Calling
Veil, a Covering
Vale, between two Hills
Vain, foolish
Vein, of the Body
Vane, or Weathercock
Value, Worth
Valley, a Vale
Vial, a Glass
Viol, a Fiddle

U

Your, of you
Ewer, a Bason
Use, Practice,
Use, to be wont
Ewes, Sheep

W

Wade, in the Water
Weigh'd, in the Scales
Whale, of the Sea
Wail, to lament
Ware, Merchandize
Were, was
Where, what Place
Weigh, to weigh
Wey, five Quarters
Weal, good
Wheal, from Scourging
Wield, a Sword
Weald, of Sussex in Kent
Wen, in the Neck
When, at what Time
White, of Colour
Wight, an Island
Whist, Silence
Wist, knew
Wood, of Trees
Wou'd, for would

Y

Yea, Yes
Ye, you
Ewe, a Sheep
Yew, a Tree
Yarn, made of Wool
Yearn, to weep.

Of Stops, Marks, and Points, used in Reading and Writing, with their Places and Significations.

THESE are of absolute Necessity; and great Regard ough to be had to them, to avoid Confusion and Misconstruction, and for the better Understanding of what we read and write ourselves; and are likewise of Use to others that shall hear us read, or see our Writing: They teach us to observe proper Distances of Time, with the necessary Raising and Falling of the Tone or Voice in Reading, and the needful Stops or Marks to be used in Writing, that we may understand it ourselves, and that our Meaning may not be misunderstood or misapplied by others.

Stops,

Stops, or Pauſes, confidered as Intervals in Reading, are indeed no more than four; though there are other Marks to be taken notice of, but to other Purpoſes: The Names of theſe four principal Stops, *viz. a Comma, Semicolon, Colon,* and *Period* or *Full Stop*; and theſe do bear to one another a kind of progreſſional Proportion of Time; for the *Comma* ſignifies a Stop of leiſurely telling One, the *Semicolon* Two, the *Colon* Three, and the *Period* Four.——

And are made or mark'd thus:

　　Comma, (,) at the Foot of a Word.
　　Semicolon (;) a Point over the Comma.
　　Colon (:) two Points.
　　Period (.) a ſingle Point at the Foot of a Word.

　, *Example of the* Comma.) There is not any thing in the World, perhaps, that is more talk'd of, and leſs underſtood, than the Buſineſs of a happy Life.

　; *Example of the* Semicolon.) It is not a Curſe that makes way for a Bleſſing; the bare Wiſh is an Injury; the Moderation of *Antigonus* was remarkable.

　: *Example of the* Colon.) A ſound Mind is not to be ſhaken with popular Applauſe: But, Anger is ſtartled at every Accident.

　. *Example of the* Period.) It is a Shame, ſays *Fabius,* for a Commander to excuſe himſelf, by ſaying, I was not aware of it. A Cruelty that was only fit for *Marius* to ſuffer, *Sylla* to command, and *Cataline* to act.

By the Examples foregoing, we may eaſily note, that a *Comma* is a Note of a ſhort Stay, between Words in the Sentence; and therefore the Tenor of the Voice muſt ſtill be kept up.——The *Semicolon* is a little long r, and the Tone of the Voice very little abated.—The *Colon* ſignifies perfect ſenſe, though not an End of the Sentence; and the Voice a little abated, or let fall.—The *Period* denotes perfect Senſe, and the End of the Sentence.

　? When the Queſtion is aſked, there is a crooked Mark made over the Period thus ? and is called a Note of Interrogation: *Example,* What could be happier than the State of Mankind when People lived without either Avarice or Envy ? The Time of Pauſe for this Stop, is the ſame with the Semicolon.

　! If a ſudden Crying out, or Wondering, be expreſſed, then this Mark is made over the Full Stop, thus ! and called

a Note of Admiration or Exclamation. *Example*, Oh the aſtoniſhing Wonders that are in the elementary World!

( ) If one Sentence be within another, of which it is no Part, then 'tis placed between two Semicircles or Parentheſis, made thus ( ) *Example*, *Pompey*, on the other Side (that hardly ever ſpake in Public without a Bluſh) had a wonderful Sweetneſs of Nature. Again, if Authors be ſure to make Choice of the beſt; and (as I ſaid before) to ſtick cloſe to them. Once more; Honour thy Father and Mother (which is the firſt Commandment with Promiſe) that it may be well with thee.——In reading a Parentheſis the Tone muſt be ſomewhat lower, as a Thing or Matter that comes in by the bye, breaking in as it were on the main Coherence of the Period. The Time is equal to a Comma, and ought to be read pretty quick, leſt it detain the Ear too long from the Senſe of the more important Matter.

' *Apoſtrophe* is a Comma at the Head of Letters, ſignifying ſome Letter or Letters left out for quicker Pronunciation; as *I'll* for *I will*, *would'ſt* for *wouldeſt*, *ſhan't* for *ſhall not*, *ne'er* for *never*, *is't* for *is it*, *'tis* for *it is*, *i'th'* for *in the*, *o'er* for *over:* Or to denote a Genetive Caſe; as, my Father's Houſe; my Uncle's Wife, &c.

' *Accent* is placed over a Vowel, to denote that the Streſs or Sound in Pronounciation is on that Syllable.

˘ *Breve* or crooked Mark over a Vowel, ſignifies it muſt be ſounded ſhort or quick.

^ *Caret* ſignifies ſomething is wanting, and is placed underneath the Line, juſt where any thing omitted, by Miſtake, or Forgetfulneſs, &c. ſhould be brought in.

^ *Circumflex* is of the ſame Shape with the Caret, but is placed over ſome Vowel, to ſhew the Syllable to be long, as *Eu-phrà-tes.*

¨ *Dialyſis*, or two Points placed over two Vowels in a Word, ſignifies they are to be parted, being no Diphthong.

- *Hyphen* or *Note of Connection*, is a ſtraight Line; which being ſet at the End of a Line, ſhews that the Syllables of that Word are parted, and the Remainder of it is at the Beginning of the next Line; and ſometimes is uſed in compound Words; as Burnt-ſacrifices, Heart-breaking, Soul-healing, Book-keeper, &c. *N. B.* That when you have not Room to write the whole Word at the End of a Line, but are obliged to finiſh it at the Beginning of the next, ſuch Words muſt be truly divided, according to the Rules of

Spelling; as re-ſtrain, not——————————-reſ-
train. When the Hyphen is placed over a Vowel, it is
properly a Daſh, and ſignifies the Omiſſion of *m* or *n*; it is
much uſed in old *Latin* Authors, and ſometimes in *Engliſh*,
eſpecially in Law Buſineſs. *Example*; It is very comēdable
to write a good-Hand.

☞ *Index*, is a Note like a Hand, pointing to ſomething
very remarkable.

* *Aſteriſm* or *Star*, directs to ſome Remark in the Mar-
gin, or at the Foot of the Page. Several of them together,
denote ſomething defective, or immodeſt, in that Paſſage
of the Author.

† *Obeliſk*, is a Mark like a Dagger, and refers to the
Margin, as the *Aſteriſm**; And in Dictionaries, it ſignifies
the Word to be obſolete, or old, and out of uſe.

¶ *Paragraph*, denotes a Diviſion, comprehending ſeve-
ral Sentences under one Head.

§ *Section*, ſignifies the Beginning of a new Head of Diſ-
courſe, and is uſed in ſub-dividing a Chapter, or Book,
into leſſer Parts or Portions.

[ ] *Brackets* or *Crotchets*, generally include a Word or
Sentence, explanatory of what went before; or Words of
the ſame Senſe, which may be uſed in their Stead.

" *Quotation*, or double Comma reverſe, is uſed at the
Beginning of the Line, and ſhews what is quoted from an
Author to be in his own Words.

Thus much for Pointing, Stops, and Marks; which, if
carefully heeded and obſerved, will add Grace and Credit
to your Writing.

Of Abreviations.

TO be ready in theſe, ſhews a Dexterity in Writing;
and is very neceſſary for Diſpatch: For by theſe, we
expeditiouſly expreſs, or ſet down a Word ſhortening it, by
making ſome initial Letter or Letters, belonging to the
Word, to expreſs it; as in the Table following.

A. For Anſwer or After-noon	*A. M.* Anno Mundi, Year of the World
A. B. Arts Bachelor	*Adm*ʳˢ. Adminiſtrators
A. Bp. Archbiſhop	*A. M.* Artium Magiſter, Maſter of Arts
*Acc*ᵗ. Account	
A. D. Anno Domini, Year of our Lord	*Ana.* of each a like Quautity
	Ap. April, or Apoſtle

*Adm*ˡ.

*Adm*l. Admiral
*Ag*t. Againſt
*Am*t. Amount
Anab. Anabaptiſt
Aug. Auguſt
A. R. Anno Regni, in the Year of the Reign
Aſt. P. G. Aſtronomy Profeſſor of Greſham College
Auſt. Auſtin, or Auſtria
B. A. Batchelor of Arts
B. D. Bachelor of Divinity
B. V. Bleſſed Virgin
Bart. Baronet
Bp. Biſhop
Char. Charles, or Chapter
Cant. Canticles, or Canterbury
Cat. Catechiſm
Char. Charles, or Charity
Chap. Chapter
Cent. Centum
Ch. Church
Chanc. Chancellor
Chron. Chronicles
Capt. Captain
Clem. Clement
Col. Coloſſians
Cl. Clericus
Co. County
Coll. Colonel
*Com*rs. Commiſſioners
Con. Conſtance or Conſtantine
Conf. Confeſſor
Cou'd, for could
Cor. Corinthians or Corollary
Cr. Creditor
C. R. Carolus Rex, or Charles the King
C. C. C. Corpus Chriſti Collegii
C. S. Cuſtos Sigili, Keeper of the Seal

C. P. S. Cuſtos Privati Sigili, Keeper of the Privy Seal
D. Dean or Duke
Dan. Daniel
Dr. Doctor or Debtor
Dea. Deacon
Do. Ditto
D. Denarii, Pence
Dec. Or xber, or 10ber, December
Devon. Devonſhire
Deut. Deuteronomy
Dec. Deceaſed
D. C. Dean of Chriſt Church
Doct. Doctrine
D. D. Doctor of Divinity
E. for Earl
Earld. Earldom
Edm. Edmund
Edw. Edward
E. gr. Exempli gratia, for Example
Engl. England
Eliz. Elizabeth
Eſa. Eſaiah
Eph. Epheſians
Eccl. Eccleſiaſtes
Ex. Exodus, or Example
Ev. Evangeliſt
Exp. Explanation
Expo. Expoſition
Eſq. Eſquire
Exon. Exeter
Fr. French, or France
Feb. February
Fra. Francis
F. R. S. Fellow of the Royal Society
G. God, Great, or Goſpel
Gal. Galatians
Gen. Geneſis
*Gen*mo. Generaliſſimo
Geo. George

G. R.

G. R. Georgius Rex, George the King

Gar. Garriſon

Gen. General

Gent. Gentleman

Goſp. Goſpel

Greg. Gregory

Hen. Henry

Hamp. Hamper

Hund. Hundred

Hum. Humphry

Heb. Hebrews

i. e. id eſt, that is

I. H. S. Jeſus Hominum Salvator, Jeſus Saviour of Men

Id. Idem, the ſame

Inſt. Inſtance or Inſtant

Ja. James, or Jacob

Jan. January

Jer. Jeremiah

Jeſ. Jeſus

Jnᵒ. John

Jud. Judges

Iſ. Iſaac

I'll, I will

Is't, is it

I'd, I had

I'm, I am

J. D. Jurium Doctor, Doctor of Laws

Joſ. Joſhua

K. King

Kᵐ. Kingdom

Knᵗ. Knight

L. Lord

L. Liber, a Book

L. Libræ, Pounds

Lieu. Lieutenant

Lp. Lordſhip

Ladiſhᵖ. Ladyſhip

L. L. D. Legum Doctor, Doctor of Laws

Learnᵍ. Learning

Lon.

Lʳ. Letter

Lam. Lamentations

Lev. Leviticus

Let's. Let us

M. Marquis, or Monday, or Morning

Mar. March

Mat. Matthew

M. Manipulus, a Handful

M. A. Maſter of Arts.

Maᵗʸ. Majeſty

Mᵈ. Madam

Monſ. Monſieur

Math. Mathematician

Mr. Maſter

Mrs. Miſtreſs

M. D. Medicinæ Doctor, Doctor of Phyſick

M. S. Memoriæ Sacrum Sacred to the Memory; alſo Manuſcript

Mich. Michael or Michaelmas

Min. Miniſter

N. Note, or Nativity

Naᵗ. Nathaniel, or Nativity

N. B. Nota bene, Note, or mark well

Nic. Nicholas, or Nicodemus

N. S. New Stile

Nᵒ. Number

n. l. Non liquet, it appears not

Nov. or *9ber,* November

O. Oliver

Obj. Objection

Obᵗ. Obedient

O. W. Old Word

O. S. Old Stile

Oct. or *8ber,* October

Oxon. Oxford

P. Paul, Paulus, Publius, or Preſident

Pugil, a Handful

Pen. Penelope

Pᵈ.

Pd. paid
Par. Parifh
p. per, or by
Pat. Patience, or Patrick
Per Ct. Per Centum, by the Hundred
Parl. Parliament
Pet. Peter
Phil. Philippians, or Philip
Philom. Philomathes, a Lover of Learning
Philo-Math. Philo Mathematicus, a Lover of the Mathematicks
P. M. G. Profeffor of Mufic at Grefham College
Prof. Th. G. Profeffor of Divinity at Grefham College
Prif. Prifcilla
Pf. Pfalm Pr. Prieft
Q. Queen, or Queftion
q. quafi, as it were
q. d. quafi dicat, as if he fhould fay
q. l. quantum libet, as much as you pleafe
q. f. quantum fuffecet, a fufficient Quantity
qr. Quarter, or a Farthing
R. Reafon
R. Rex, King; or Regina, Queen
Revd. Reverend
Rev. Revelations
Rich. Richard
Robt. Robert
Rog. Roger
Ret. Return
Reg. Prof. Regius Profeffor, founded by K. Henry VIII.
Rom. Romans
Rt. Honble. Right Honourable
Rt. Wpl. Right Worfhipful
St. Saint

Sam. Samuel
Sect. Section
Sept. or 7ber, September
Serj. Serjeant
Serv. Servant
Shr. Shire
Shan't, for fhall not
Salop. Shropfhire
Sol. Solution
Staff. Stafford
Sp. Spain, or Spanifh
Sr. Sir
fs. Semiffis, half a Pound
S. S. T. P. A Profeffor, or a Doctor of Philofophy
Stew. Steward
Tho. Thomas
Thef. Theffalonians
The. Theophilus
To. Tobias
V. Virgin, or Verfe
U. Ufe
Vid. fee
Ven. Venerable
Viz Videlicet, to wit, or that is to fay
Wm. William
Wp. Worfhip
Wpl. Worfhipful
W. R. William Rex
wn. when
Xn. Chriftian
Xt. Chrift
Xtopher. Chriftoper
ye. the
yn. then
yo. you
ym. them
yt. that
yr. your
Z. Zeal
&. et, and
&c. & cætera, and the reft. or, and fo forth.   And

And now having finished my Directions concerning Spelling, Pointing, &c. I shall proceed to give some Instructions in Relation to the most useful Art of Writing.

When any Person has thoroughly acquainted himself with Spelling, and understands good *English*, &c. the next Step necessary, is the Acquiring of the accomplishing Art of fair Writing, to put this Spelling in Practice : In order thereto, I shall endeavour to give such Directions, and proper Instructions, as may duly qualify any Person therein.

First, and principally, there must be a fixed Desire and Inclination imprinted in the Mind, for its Attainment : For I myself had never acquired, or arrived to any Proficiency in it, if I had not had a strong Desire and Inclination to it, rising from being convinced of its excellent Use in Trade, and all Manner of Business, according to the Verse,

> *Great was his Genius, most sublime his Thought,*
> *That first fair Writing to Perfection brought,* &c.

Next to the Desire, there must be added a steady Resolution to go through with it, 'till it is gained ; and by a diligent and indefatigable Application, overcome all seeming Difficulties, that may arise in the Progress of its Attainment, agreeable to this Distich ;

> *By frequent Use, Experience gains its Growth ;*
> *But Knowledge flies from Laziness and Sloth.*

✳ ✳

DIRECTIONS *to* BEGINNERS.

FIRST, 'tis necessary to be provided with the following Implements, *viz.* good Pens, good and free Ink, and also good Paper when arrived to commendable Performances ; likewise a flat Ruler for Sureness, and a round one for Dispatch, with a Leaden Plummet or Pencil, to rule Lines : Also Gum Sandrick Powder (or Pounce as they call it) with a little Cotton dipped therein, which rub gently over the Paper, to make it bear Ink the better ; particularly when full Hands are to be written, such as Text, &c. and especially when you are obliged to scratch out a Word or Letter ; for then there will be a Necessity for its Use : And rubbing the Place with the Pounce, smooth it with the Haft of the Penknife, or clean Paper, and then you may write what is proper in the same Place. These Implements are summed up in these Lines.

A Pen-

A Pen-knife Razor Metal, Quills good Store;
Gum Sandrick Powder, to pounce Paper o'er;
Ink, shining black; Paper more white than Snow
Round and flat Rulers, on yourself bestow,
With willing Mind, these, and industrious Hand,
Will make this Art your Servant at Command.

To hold the Pen.

THE Pen must be held somewhat sloping, with the Thumb and the two Fingers next to it; the Ball of the Middle Finger must be placed strait, just against the upper Part of the Cut or Cradle, to keep the Pen steady. The Fore Finger lying strait on the Middle Finger; and the Thumb must be fixed a little higher than the End of the Fore Finger bending in the Joint: and the Pen be so placed, to be held easily without griping. The Elbow must be drawn pretty close to the Body, almost to touch it. You must support your Hand, by leaning on the Table Edge, resting on it, half way between your Wrist and Elbow, not suffering the Ball, or fleshy Part of your Hand to touch the Paper; but resting your Hand on the End of your Little Finger, that and your fourth Finger bending inwards, and supported on the Table as abovesaid. So fixed, and sitting pretty upright, not leaning your Breast against the Table, proceed to the making the small *o*, the *a, e, c, i, m, r, s, w,* and *x*; which must all be made of equal Bigness and Height, the Distance or Width between the two Strokes of the *n*, must be the same with the Distance or Width of the three Strokes of the *m*; the same Proportion of Width must be observed in the *u, w,* and *o*. The Letters with Stems or Heads, must be of an equal Height; as the *b, d, f, h, k, l,* and *s*. And those with Tails, must be of equal Depth, as the *f, g, p, q,* and *s*. The Capitals must bear the same Proportion one to another, with respect to Bigness and Height, as *A, B, C, D, E, F, G, H,* and *I, &c.*—This Proportion of Letters, both of Small and Great, must be observed in, and will serve for, all Hands whatsoever. *N. B.* That all upright Strokes, and those leaning to the left Hand, must be fine or hair Strokes; and all downright Strokes must be fuller and blacker. And when you are in Joyning, where Letters will naturally join, without any straining, take not off the Pen in Writing, especially in Running or Mix'd Hands. Care likewise must be duly taken, that there be an

equal

equal Diſtance between Letter and Letter, and alſo between Word and Word. The Diſtance between Word and Word may be the Space that the ſmall *m* takes up; but between Letter and Letter, not quite ſo much. Sit not long at writing (that is no longer than you improve) eſpecially at the firſt, leſt it weary you, and you grow weary of Learning. Imitate the beſt Examples, and have a conſtant Eye at your Copy; and be not ambitious of writing faſt, before you can write well: Expedition will naturally follow, after you have gained a Habit of writing fair and free; and 'tis much more commendable to be an Hour in writing ſix Lines well, than to be able to write ſixty Lines in the ſame Time, which perhaps is perfect Scribble, and altogether unintelligible. And beſides by a ſlow and fair Procedure, you will learn in half the Time; and therefore 'tis a vain Thought in a Learner, to deſire to be quick before he hath acquired Experience, and a Freedom of Writing by frequent Practice. If you have Cotton in you Ink, look well that there be no Hairs at the Nib of your Pen. Never overcharge your Pen with Ink; but ſhake what is too much into the Ink again. When you leave off, keep your Pen or Pens in Water, till you come to your Writing again.

How to make a Pen.

THIS is gained ſooner by Experience and Obſervation from others, that can make a Pen well, than by verbal Directions. But *Note*, That thoſe Quills called *Seconds* are the beſt, as being hard, long and round in the Barrel: and before you begin to cut the Quill, ſcrape off the ſuperfluous Scurff with the Back of your Pen-knife, and moſt on the Back of the Quill, that the Slit may be the finer, and without Gander's Teeth (as the Roughneſs of the Slit is by ſome called) After you have ſcraped the Quill as aboveſaid, cut the Quill at the End, half through, on the back Part; and then turning up the Belly, cut the other half or Part quite through, *viz.* about a quarter or almoſt half an Inch, at the End of the Quill, which will then appear forked: Then enter the Pen-knife a little in the back Notch; and then putting the Peg of the Pen-knife, Haft (or the End of another Quill) into the back Notch, holding your Thumb pretty hard on the Back of the Quill, (as high as you intend the Slit to be) then with a ſudden or quick Twitch, force up the Slit; it muſt be ſudden and ſmart, that

that the Slit may be the Clearer : Then by several Cuts of each Side, bring the Quill into equal Shape, or Form, on both Sides, and having brought it to a fine Point, place the Inside of the Nib on the Nail of your Thumb, and enter the Knife at the Extremity of the Nib, and cut it through, a little sloping : Then with an almost downright Cut of the Knife, cut off the Nib ; and then by other proper Cuts, finish the Pen, bringing it into handsom Shape, and proper Form : But meddle not with the Nib again, by giving it any Trimming or fine Cutts ; for that causes a Roughness and spoils it : But if you do, to bring the Nib the evener, you must nib it again, as above directed. ☞ *Note,* That the Breadth of the Nib must be proportioned to the Breadth of the Body, or downright black Strokes of the Letters in whatsoever Hand you write whether Small or Text. *Note also,* That in your fitting to write, you place yourself directly against a fore-right Light, or else to have it on your left Hand, (which I esteem best) but by no Means, to have the Light on your right Hand, because the Shadow of your Writing-Hand will obstruct your Sight, and therefore is very improper. And therefore, methinks, all Persons in fixing up their Accompting Houses, should have a particular Regard to their Situation, in respect to what was before mentioned.

Thus far for Direction. Now for Application. I have here set Copies of the most usual, fashionable, and commendable Hands for Business ; with Alphabets of Great and Small Letters proper to each. Be sure you make your Letters well, (both Small and Great) before you proceed to joining. Be careful in Imitation, and observe the foregoing Directions, and without doubt you will gain your End. Command of Hand, or the Art of striking Letters, &c. is gained by frequent practising after good Examples.

A

A B C D E F G H I J K L M N O P Q

R S T U V W X Y Z Æ

a b c d e f g h i j k l m n o p q r

ſ s t u v w x y z &

N. B. 'Tis neceſſary for all thoſe who would qualify themſelves for Buſineſs, often to imitate this Print-Hand; to make clean Marks on Bales, or plain Directions on Parcels.

Copies

Copies in Profe, and Clinking, in Alphabetical Order.

A

ART is gained by great Labour and Induſtry.

A covetous Man is always, as he fancies, in Want.

Add to your Faith Virtue, and to Virtue Knowledge.

A blind Man's Wife, they ſay, needs no Painting.

A comely Countenance is a ſilent Commendation.

A Place of ill Example may endanger a good Man.

A prudent Man values Content more than Riches.

A virtuous Mind is rather to be choſen than Promotion.

A fair Piece of Writing is a Sort of ſpeaking Picture.

All mundane Things run a continual Round.

Authority is the main Point in Government.

All God's Commandments keep moſt divinely pure.

A Man's Manners oft-times forms his Fortune.

A great Lyar is ſeldom believed, tho' he ſpeaks Truth.

All evil Things and vain, ſtrive never to maintain.

A virtuous minded Youth, will ever love the Truth.

A prudent Youth and wiſe, will not Advice deſpiſe.

All you that write well, ſtrive others to excel.

Abundance ruins ſome, but Want makes all to moan.

Amendment ſtill ſhould ſhine, in all and every Line.

A greater Loſs can't be, than that of Liberty.

A good and virtuous Lad, will ſhun whate'er is bad.

Abundance proves a Snare, but moſt of Want are aware.

All Idleneſs avoid, by it moſt are deſtroy'd.

All idle lazy Boys, obſtruct their Parents Joys.

A Man by Conduct may keep Miſery away.

All Miſhap hath been occaſion'd by our Sin.

Avoid th' Occaſion ſtill, of running into ill.

A Youth that would tranſcend, muſt ever mind to mend.

A Lad that would excel, muſt mind his Copy well.

B

Bounty is commendable in ſome, but it ruins others.

By a commendable Deportment we gain Reputation.

By Delight, and ſome Care, we come to write fair.

By Diligence and Induſtry, we come to Preferment.

Beauty without Virtue, is but a painted Sepulchre.

Beauty commands ſome, but Money all Men.

By conſtant Amendment, we riſe to Preferment.

Brave Men will do nothing unbecoming themſelves.

Be wiſe and beware ; of blotting take care.

Bounty is more commended than imitated.
By Iniquity and Sin, Misfortunes enter in.
By Idleness and Play, Youth squander Time away.
Barren are those Joys, we waste away in Toys.
Bless'd are their Joys above, who do their Time improve.
Badness brings all Sadness, therefore follow Goodness.
By trusting to To-morrow, Men plunge themselves in Sorrow.
Be wise betimes, shun darling Crimes.

C

Contentment is preferable to Riches and Honour.
Can they be counted wise, who Counsel do despise?
Care mixed with Delight, will bring us soon to write.
Consider the shortness of Life, and Certainty of Death.
Contentment is a Gem, beyond a Diadem.
Competency with Content, is a great Happiness.
Contention and Strife, make uneasy our Life.
Courtiers receive Presents in a Morning, and forget e'm by
(Night.
Caution and Care, oft baffle a Snare.
Contentment makes a Man happy without a Fortune.
Censure no Man, nor detract from any Man.

D

Deride not Infirmities, nor triumph over Injuries.
Delight and some Care, will make you write fair.
Delight in Virtue's Ways, and then you'll merit Praise.
Death conquers potent Princes, and their Powers.
Delight in what you undertake to learn.
Duty, Fear, and Love, we owe to God above.
Death is before the old Man's Face, and may be at the
(young One's Back.
Death only can declare, what Dust the Bodies of all Mortals
(are.
Drinking is the Drowning of Cares, not the Cure of them.
Death destroys not the Soul, but an ill Life does.
Do to others as you would, that they unto you should.
Delay is the Remora to all good Success.
Deprive no Person of his lawful Due, lest they should do
(the same by you.
Delight and Pleasure's but a golden Dream.
Death is less fear'd by a Fool than a Philosopher.

E

Endless Joys have those, whose Sins are vanquish'd Foes.
Every Plant and Flower, shews to us God's Power.

Example

Example oft doth rule, the wife Man and the Fool.
Examples oft prevail, when Arguments do fail.
Every idle Thought, to Judgment muft be brought.
Every Sluggard is the Caufe of his own Misfortune
Envious Men do fret, when they fee others get.
Evil Company makes the Good bad, and the Bad worfe.
Experience is the beft Looking-Glafs of Wifdom.
Even at Head and Feet, be fure your Letters keep.
Endeavour to do well, and then you may excel.
Every Man is right, that mixes Profit with Delight.
Evil Men and fly, take Care how you come nigh.
Envy and Care, make the Body grow fpare.
Every money'd Man, hath others at Command.

F.

Fair Words commonly drefs foul Deeds.
Fair Faces have fometimes foul Conditions.
Few do Good with what they have gotten ill.
Future Events muft be left to Providence.
Fools are ruled by their Humour, but wife Men by Intereft.
Firm keep your Mind on Things that are fublime.
Fear is a good Watchman, but a bad Defender.
Fate will ftill have, a kind Chance for the Brave.
Fraud in Childhood, will become Knavery in Manhood.
Fear without Hope turns to Defpair.
Faith and Hope are both dead when divided.
Fortune at fome Hours to all is kind.
Feign'd Looks oft hide what the falfe Heart doth know.
Fortune and Fame create a great Name.
Friends in Adverfity are not often found.
Fools and Knaves are not Companions for honeft Men.
Frugality and Induftry are the Hands of Fortune.

G.

Godlinefs with Contentment is great Gain.
Good Manners in a Lad, will make his Parents glad.
Great Minds and fmall Means ruin many Men.
Good Manners, Grace and Truth, are Ornaments in Youth.
Good Men, as well as bad, have fometimes Fortunes fad.
Great Good you fure will find, if you are well inclin'd.
Godlinefs hath the Promife of the Life that now is, &c.
God's Works only are perfect in their Kind.
Gluttony ranfacks *Noah*'s Ark for the Riot of a Meal.
Grief nourifh'd in your Breaft, will never let you Reft.
Greater Profit doth always come of Learning than of Play.

Great Men, tho' they ſhou'd, are not always good.
Good Men are ſafe when wicked Ones are at odds.
Get what you get honeſtly, and uſe it frugally.
God is Omnipreſent, True, and Almighty.

H

Haſty Reſolutions are ſeldom fortunate.
Haſte makes Waſte of Paper, Ink and Time.
He that ſtumbles, and falls not, mends his Pace.
Honour and Renown, will the Ingenious crown.
Hypocrites firſt cheat the World, and at laſt themſelves.
Honour that is true, 'tis lawful to purſue.
Human Life will human Frailties have.
He that ſends a Fool of an Errand, ought to follow him.
Honours are Burthens, and Riches have Wings.
He is a wiſe Security, that ſecures himſelf.
He that ſins againſt Conſcience, ſins with a Witneſs.
Honour the hoary Head, that Virtue's Paths do tread.
Happy are their Joys, who turn away from Toys.
Hours fly ſwift away, improve each Moment in the Day.
He that ſwims in Sin, muſt ſink in Sorrow.
He that fears not an Oath, will not tremble at a Lye.
He hath his Work half done, that hath it well begun.

I

Inſtruction, and a good Education, is a durable Portion.
Ignorance is the greateſt Enemy to Learning.
In praiſing ſparing be, and blame moſt ſparingly.
Imaginary Toys, do pleaſe ſome idle Boys.
Intemperance is attended by Diſeaſes, and Idleneſs with Want.
It is good to have a Friend, but bad to need him.
Idleneſs and Sloth, decreaſeth Learning's Growth.
Innocency need not fear the Lion, or the rugged Bear.
It is better to be unborn than untaught.
It is too late to ſpare, when the Bottom is bare.
Idleneſs hath no Advocate, but many Friends.
Improvement of Parts, is by Improvement of Time.
If you'd win a Pen of Gold, firſt learn well the Pen to hold.
It is the Work of an Age, to repair the Miſcarriage of an
                                          (Hour.

K

Keep a cloſe Mouth, if you'd have a wiſe Head.
Kings, as well as mean Men, muſt die.
Kings may command, and Subjects muſt obey.
Kingdoms and Crowns, muſt in the Duſt be laid.
Knowledge ſublime, is gained by much Time.

Keep

Keep at a Diftance from Company that's ill.
Keep good Decorum in your Words and Deeds.
Keep clofe your Intention, for Fear of Prevention.
Kings may win Crowns, but cannot conquer Death.
Keep Faith with all Men, and have a Care of a Lie.
Keep good Company, if you'd keep a good Name.
Knowledge, if abus'd, is like a Gem ill us'd.
Kingdoms bring Care, and Crowns are heavy Things to wear.
Keep out evil Thoughts by entertaining good Ones.
Kind Actions neglected, make Friendfhip fufpected.
Keep fafe good Counfel, and entertain not all Advice.
Kindle not Paffion's Fire, it burns with dreadful Ire.

L

Learn to live, as you would wifh to die.
Love and Honour will bear no Rivals.
Learn to unlearn what you have learnt amifs.
Learn now, in Time of Youth, to follow Grace and Truth.
Liberty is grateful to all, but deftructive to many.
Lying is the Duty of none, but the Cuftom of many.
Learning do but love, and then you will improve.
Liberality, without Difcretion, becomes Profufenefs.
Let no Jeft intrude upon good Manners.
Learn now, in youthful Prime, to hufband well your Time.
Learn how to make as well as ufe a Pen.
Liberality fhould have no Object but the Poor.
Loft Opportunities are very rarely, if ever, recovered.
Let not the work of To-day be put off 'till To-morrow.
Laugh not out of Meafure, nor out of Seafon.

M

Money makes honeft Men and Knaves, Fools and Philo-
(fophers.
Monuments of Learning are the moft durable.
Many know Good, but do not the Good they know.
Make ufe of Time, now whilft you'r in your Prime.
Money commonly corrupts both Church and State.
Many think not of living, 'til they can live no longer.
Money pleads all Caufes, and defends all Titles.
Many, when they have fill'd their Bellies, complain of weak
(Stomacks.
Meafure not Goodnefs by good Words only.
Marriage is out of Seafon, if we are either too Young or
(too Old.
Moft precious Time efteem, which no One can redeem.

Many

Many live Beggars all their Lives, that they may not die so.

Money makes some Men mad, many merry, but few sad.

Many are led by the Ears more than by the Understanding.

Most precious Things are still possess'd with Fear.

Many are made Saints on Earth, that never reach Heaven.

Men of Intrigue commonly fail with all Winds.

Money answers all Objections, and removes all Scruples.

Money and Poverty make great Knaves and little Ones.

Misfortune is the Touchstone of Friendship.

Marriage, says some, breeds Cares and Cuckolds.

Mend your Manners, and that will mend your Fortune.

Many want Help that have not the Face to ask it.

Momentary and vain, is all earthly Gain.

N

Nothing is constant in this uncertain World.

Necessity is commonly the Mother of Invention.

Next to a good Conscience, prefer a good Name.

None so high can be, as no Mis-hap to see.

Nothing is so hard but Diligence may overcome.

No Task's too hard, when Heaven's the Reward.

None can lay himself under an Obligation to do Ill.

Never lament or weep, for Loss of what you cannot keep.

Noise and Talk, without some Rule, doth indicate that
                       (Man a Fool.

Nature seldom changes with the Climate.

Never study to please others, and thereby ruin yourself.

Nature's oldest Law we find, is that we to ourselves be kind.

O

Opportunity neglected, brings severe Repentance.

On present Time depend our future State.

Opus and *Usus*, as we read, are sometime Latin for our Need.

Of what gives most Delight, we soonest lose the Sight.

Omitting doing Good, is a committing Evil.

Orators are more solicitous to speak well than to do so.

Our Sand doth run apace, and soon we end our Race.

Our Inclinations get the Rein, to gain a Point we should
                       (restrain.

Our Minds must be cultivated, as well as our Plants.

Other People's Death should be Memento's to our own.

Our early Care should be, to live most piously.

Our Time of Life is call'd a Span, by which observe how
                       (frail is Man.

One false Step sometimes prevents another,

Provide againſt the worſt, and hope for the beſt.
Poor Men want many Things, but covetous Men all.
Patience and Time run thro' the rougheſt Day.
Put to your Tongue a Bridle, that it talk not idle.
Pain, Diſgrace, and Poverty, have frightful Looks.
Prayers and Provender hinder no Man's Jou ney.
Put not off the main Buſineſs of Life, to the very Article
(of Death:
Pain we can count, but Pleaſure ſteals away.
Poor Freedom is better than rich Slavery.
Patience is the Lord of the lean Meat of Adverſity.
Paſſion and Partial ty govern in too many Caſes.
Perfection in this World, is Virtue ; and in the next,
(Knowledge.

Q

Quick Promiſers are commonly ſlow Performers.
Quietneſs and Content, are Mates moſt Excellent.
Qualify exorbitant Paſſions with Quietneſs and Patience.
Quiet Men have quiet Minds, and enjoy Content.
Quicken Learning with Alacrity and Delight.
Quarrelſom Perſons ſometimes meet with their Match.
Quot Homines tot Sententiæ, ſo many Men, &c.
Quills are made for Pens, and Pens for Letters.
Quietly learn to bear a Croſs, if we repine, 'tis to our Loſs.
Queſtions in Jeſt, no ſerious Anſwers need.
Quench Paſſion's Heat ; don't ſuffer it to reign.
Quantity with ſome is what they'd hit; but Quality prevails
(with Men of Wit.

R

Remember your Duty to God, your Neighbour and yourſelf.
Repentance comes too late, when all is conſumed.
Reaſon ſhould always guide, and o'er our Acts preſide.
Reputation is the Darling of human Affection.
Reſt continued long, makes Idleneſs grow ſtrong.
Rely on Virtue more than Blood, for that is what you ſhou'd.
Repent To-day, To-morrow may be too late.
Reputation is like a Glaſs, when cracked, it will be crazy.
Reputation is gain'd by many Actions, and loſt by one.
Remember Death, and do not forget Judgment.
Religion in Hypocrites, is as it were but Skin deep.
Relations and Friends, purſue their own Ends.

Religion hath and doth give Countenance to much Wick-
Riches ferve a wife Man, and rule a Fool.   (ednefs.
Run no great Rifque for 'vantage fmall, tho' fome for Money
                                            (hazard all.
Reafon's Dictates follow ftill ; which if you do, you'll ne'er
                                            (do I'll.
Righteous Mens Prayers fhall be regarded.
Repentance is a quite forfaking Sin ; but he repents not
                                            (that remains therein.
Refolve to amend, and purfue it to your End.
Review the Time that you have mifpent ; think upon it,
                                            (and lament.
Recreation fhould fit us for Bufinefs, not rob us of Time.

S

Sin and Sorrow are infeperable Companions.
Some are too ftiff to bend, and too old to mend.
Some *willinglier* difcharge a Reckoning, than pay a Debt.
Sin is moft certain, firft Caufe of Misfortune.
Study to live quiet, and to do your own Bufinefs.
Some in their Zeal are hot, but Knowledge they've not.
Set Bounds to Zeal by Difcretion.
Silence is the Sanctuary of Prudence and Difcretion.
Sloth is an Argument of a mean and degenerate Mind.
Short and therefore vain, is all earthly Gain.
Soft Words, fometimes, work upon the proudeft Heart.
Sleep and Idlenefs are Enemies to Learning.
Sin is the Caufe of Shame ; who love it are to blame.
Small Means, and large Minds, ruin many Men.
Short are *all* Extreams, whether of Good or Ill.
Spend Time in good Duties, and Treafure in good Works.
Some go fine and brave, finely to play the Knave.
Six Foot of Earth, ends *all* Diftinctions of our Birth.
Some muft die, that others may live, faid the Grave-digger.
Silly People are commonly *pleas'd* with *filly* Things.
Some are *full* of *oral* Sanctity, and *mental* Impiety.
Small Profit comes from *all ungodly* Gain.

T

Train up a Child in the Love and Practice of good Manners.
The End of Mirth is many times the Beginning of Sorrow.
Time is fo fwift of Foot, that none can overtake it.
Time paffeth fwift away, no Mortal can it ftay.
Time paffeth fwift away, improve therefore each Day.
The doing nothing, is very near doing Evil.

                                            Thofe

Those who won't mend To-day, *shall* have more Work
(To-morrow.

The Borrower is a Slave to the Lender ; and the Security
(Slave to both.

Truth is the strongest Bands of human Society.

The Endowments of the Mind, ought not to be confined.

There's no discerning Pate, that can contend with Fate.

The Destruction of the Poor is their Poverty.

The Country cares not what the City thinks.

To do Good is the Way to find it. 1770.

'Tis just so much lost as is idly spent.

There is no such Thing in Nature as Perfection.

Time, Tide, and Carriers, will for no Man stay.

The Unfortunate are insulted by every Rascal.

'Tis inhuman to sport with anothers Infirmities.

V

Virtue is first to be fought for, and Money the next.

Vain and transitory, is all mundane Glory.

Virtue and Fortune work Wonders in the World.

Value more good Conscience than a great Fame.

Unwillingly go to *Law*, and *willingly* make an End.

Understanding a Thing is half doing it. 1769.

Variety is the Happiness of Life. 1 2 3 4 5 6 7.

Virtuous and brave Actions gain Reputation.

Use soft Words and hard Arguments. 1 7 5 9.

Virtue is commended of *all*, but *follow'd* by few.

Unthankfulness is the Cause of the Earth's Unfruitfulness.

Vain Conceitedness is ridiculed by *all*. 1 2 3 4 5.

Virtue is seldom found a Match for Power.

Understand Things not by their Form, but Quality.

Virtue *all* commend, but few do it attend.

Union and Peace, make Discord to cease. 1 7 6 9.

Valour and Greatness, are preferr'd before Neatness.

Vain and foolish Things, Disreputation bring.

Virtuous Actions *will*, bring Reputation *full*.

W

What is more vain than publick Light to shun.

Who fears no Bad, stands most unarm'd to *Ill*.

What pleases God must be, none alters his Decree.

We are many Times deceiv'd with the bare Shew of Good.

Women and Wine, tho' they smile, they make Men pine.

When Fortune knocks, be sure to ope the Door.

Wine is a Turn-coat, first a Friend, then an Enemy.

What

What is violent is ſeldom permament. 1. 4, 10, 9.
When good Cheer is lacking, our Friends will be packing.
We dance *well*, while Fortune plays on the Muſick.
We keep a better Account of our Money than our Time.
Wickedneſs in Jeſt, leads us to Wickedneſs in Earneſt.
We muſt not blame Fortune for our own Faults.
Where Knavery is in Credit, Honeſty is put out of Counte-
(nance.
We muſt *look* to Time paſt, to improve what's to come.
What is fixed in our Hearts, is ſeldom out of our Heads.
Wickedneſs comes on by Degrees, as *well* as Virtue.
Would you be rich, be induſtrious ; if wiſe, be ſtudious.

X

Xenophon was a great Captain, as *well* as a Philoſopher.
Xerxes wept at the thoughts that his vaſt Army would be
(dead in 100 Years.
Xerxes whipt the Sea becauſe it would not obey his Command.
Xenocrates, tho' a Philoſopher, was very *dull* and *heavy*.
Xenophilus liv'd without Sickneſs one hundred and ſeven Years.
'Xamples of the beſt for ever mind, and imitate in kind.
'Xpel bad Thoughts, and what is Sin, forth of your Mind,
(and let what's good come in.
'Xamine *well* how you improve, for that *will* be as you
(your Learning love.
'Xerciſe will much Improvement gain. 1 2 3 4 5 6.
'Xperience is the Miſtreſs of all Arts and Sciences.
'Xcel in what you can, and ſtrive to lead the Van.
'Xpreſs your Deſire to learn by your Diligence.

Y

Youth is full of Diſorder, and Age of Infirmity.
Young Men lament, your Minutes miſpent.
Your Time improve, and ſquander't not away.
Your Spelling mind, and Senſe of what you write.
Yield quietly to what muſt come unavoidably.
Young Men in Strength ſhould provide againſt Age and
(Weakneſs.
Youth in their Prime, ſhould manage *well* their Time.
Youth to the Grave do go, as *well* as the Aged do.
Yield yourſelf Servant to Righteouſneſs and to Holineſs.
Your Copy mind, write fair, and of blotting beware.
Your care ſhould appear by writing moſt fair.
Your Delight and your Care will make you write fair.

Z

Z

Zeal, in a good Caufe, commands Applaufe.
Zeal, mixt with Love, is harmlefs as the Dove.
Zealoufly ftrive, with Emulation write.   1770.
Zealoufly ftrive for an eternal Crown.   1 2 3 4 5.
Zeno was the firft of the Stoic Philofophers.
Zeal without Knowledge, is but Religious Wild-fire.
Zaccheus he was low, but yet his Faith wan't fo.
Zeal, if not rightly directed, is very pernicious.
Zealoufly bend amain, fair writing to obtain.

Short Lines for Text Hand.

Abandon whatfoever's Ill —- Be Wife betimes.
Care Deftroys the Body—Do the Things that are Juft.
Expect to receive as you give—Frequent good Company.
Give what you give chearfully—Have good Men in Efteem.
Imitate that which is good—Keep God's Commandments.
Learn to be wife——— Money anfwers all Things.
Nothing get, nothing have —— Obferve Modefty.
Pleafures are very fhort——Pains are very long.
Quit all Revenge—— Quiet your Paffions.
Recompence a good Turn —— Repent of your Sins.
Spare for to live——Sin very little.
Time will improve——Turn from your Sins.
Ufe moderate Pleafure——Ufe not bad Company.
Vain are fome Pleafures——Vile are fome Vulgar.
Wifdom is the principal Thing—Wife Men are fcarce
Xenophon and Xenocrates —— Zeno and Zenobia.

Double Lines in Verfe.

All you that in fair writing would excell,
How much you write regard not, but how well.
Bear your Pen lightly, keep a fteady Hand,
And that's the Way, fair Writing to command.
Carefully mend in each fucceeding Line.
For that's the Way to reach to what is fine.
Defcending Strokes are dark, but upwards fmall ;
Even at Head and Feet keep Letters all.
From Blots keep clean your Book ; and always mind,
To have your Letters all one Way inclin'd.
Grace every Letter with perfect, full and fmall,
And keep a due Proportion in them all.

Hold

Hold your Pen lightly, gripe it not too hard,
And with due Care your Copy well regard,
Join every Letter to its next, with Care,
And let the Stroke be admirably fair.
Keep a light Hand, and smoothly glide along,
Ascending fine, and downward Strokes are strong.
Let graceful Beauty in each Line appear,
And see the Front do not excel the Rear;
Majestic Grace, beautiful and strong,
Doth, or else ought, to every Line belong.
No rough Edges ever should be seen;
But all the Letters should be smooth and clean.
Of Care depends the Beauty of each Line,
For that alone will make your Art to shine.
Praise is deserving to the careful Hand,
But to the Unthinking, doth Correction stand.
Quit yourself nobly, with a prudent Care,
Of clumsey Writing, and of Blots beware.
Remember strictly, what the Art enjoins,
Equal siz'd Letters, and as equal Lines.
Small Letters must of equal Height be seen;
The same of Great; both beautifully clean.
Time and Delight will easy make the Task:
Delight, Delight's the only Thing I ask!
Vain are the Hopes of those that think to gain
This noble Treasure, without taking Pain.
Whilst idle Drones supinely dream of Fame,
The Industrious actually do get the same.
'Xamples of the best, with Emulation strive,
To imitate, and then your Name'll survive.
Youth is the Time for Progress in all Arts;
Then use your Youth to gain most noble Parts.
Zeal for Attainment of each Art shou'd burn
With fervent Warmth, then to Account 'twill turn.

Since good Ink is necessary to good Writing, I shall give a Receipt or two for making some of the best black Ink in the World, which is as follows, *viz.*

A Receipt for Black Ink.

TO fix Quarts of Rain or River Water, (but Rain Water is the best) put one Pound and a Half of fresh blue Galls of *Aleppo* (for those of *Smyrna* are not strong enough)

C

bruised

bruifed pretty fmall; 8 Ounces of Copperas, clean, rocky, and green; alfo 8 Ounces of clean, bright, and clear Gum Arabick; and 2 Ounces of Roche Allum: Let thefe ftand together in a large Stone Bottle, or clean Stone Pot, or earthen Pot, with a narrow Mouth to keep it free from Duft; fhake, roll, or ftir it well, once every Day, and you will have excellent Ink in about a Month's Time: And the older it grows, the better 'twill be for Ufe.

Ingredients for a Quart.

1 Quart of Water, 4 Ounces of Galls, 2 Ounces of Copperas, and 2 Ounces of Gum, mix'd and ftirred as above.

☞ If you foak the green Peeling of *Walnuts* (at the Time of the Year when pretty ripe) and Oak Saw-duft, or fmall Chips of it, in Rain Water, and ftirr'd pretty often for a Fortnight, and then ftrain'd, and the Water ufed with the fame Ingredients as above, the Ink *will ftill* be ftronger and better.

How to make Red Ink.

TAKE 3 Pints of Stale Beer, (rather than Vinegar) and 4 Ounces of ground *Brazil* Wood; fimmer them together for an Hour; and then ftrain it thro' a Flannel, or, *&c.* then bottle it up (well ftopped) for Ufe.

Or you may diffolve half an Ounce of *Gum Stennega*, or *Arabick*, in half a Pint of Water; then put a Pennyworth of *Vermillion* into a fmall Gallipot and pour fome of the Gum Water to it, and ftir it well, and mix it together with a Hair-pencil, to a proper Confiftency; but it will not incorporate prefently, but by the next Day it will; then having a clean Pen, dip it into the Ink, having firft well ftirred it with the Pencil, and then you may ufe it; It is a fine and curious Red, tho' not fo free as the other. And after the fame Manner, you may make any other colour'd Ink, as Blue, Green, Yellow, Purple, *&c.* having divers Gallipots for that Ufe. In like Manner, you may mix the *Shell Gold*, for curious Occafions, pouring two or three Drops, according to Direction, into the *Shell*, and mix it *well* with a clean Hair Pencil, and with it put a little into a clean Pen, *&c.* The *fmall Shells* may be bought at fome *Fan-fellers*, or *Fan-painters*, at two or three for Two-Pence; or the large ones (which are the beft) at the *Colour-fhops*, at Six-Pence a Piece.

To keep Ink from Freezing or Moulding.

IN hard frosty Weather, Ink *will* be apt to freeze; which if once it doth, it *will* be good for nothing; for it takes away all its Blackness and Beauty. To prevent which (if you have not the Conveniency of keeping it warm, or from the Cold) put a few Drops of Brandy, or other Spirits, into it, and it will not freeze. And to hinder its Moulding, put a little Salt therein.

Familiar LETTERS *on several Occasions, and on divers Subjects.*

BEFORE we enter upon *Arithmetick*, it may be proper to give some Examples of Letters on various Subjects, and upon divers Occasions; which Letters frequently read over, and sometimes copied, it may be a good Introduction, to a handsome Style of Sense, and to a commendable Manner of Writing; besides the Help and Use they may be of in noting and observing the Method of Spelling good *English*, and orthographically placing *Great Letters*, or *Capitals*, where they ought to be; and also an imprinting in the Mind the due Notion of Points, Stops, &c. and when and where to be made.

Letters are variously worded, and ought properly to express the Desires, Thoughts, &c. of the Writer to the Reader, that thereby the Receiver of the Letter may *fully* understand, and be justly inform'd of the Occasions, Wants, or Intentions of the Sender.

Letters being writ on divers Subjects, and on sundry Occasions, they may be ranked under these Denominations, or several Heads following, *viz. Letters of proffered Assistance, Letters Consolatory, Letters of Thanks, Letters Congratulatory, Ditto of Reproof, Ditto of Excuse, Ditto Accusatory, Ditto of Advice or Counsel, Ditto of Recommendation, Ditto Exhortatory, Ditto of Remonstrance, and Letters of Visit, properly called Familiar Letters, Letters of Business*; and lastly, *Mixed Letters, that is, on various Subjects, and different Affairs.*

I shall not have Room to touch upon every one of those particularly; but I shall give sundry Examples promiscuously exhibited, and are such as these that follow, viz.

A Letter from a Son to his Father.

London, 4th Dec. 1768.

Honoured Father,

WITH all dutiful Respect, I trouble you with these Lines, to enquire of the good State of your Health; (of which I shall be extreamly glad to hear) and to present you my most humble Duty, and tenders of filial, and most affectionate Service. I have not had the Favour of any Letter from you, since that from you dated the 8th of *October* last, which I reply'd to very next Post, and in such Particulars as you enjoin'd me. I have sent you, Sir, by *Samuel Simple*, the *Pemsey* Carrier, a Spaniel Dog, which is an excellent good one of his Kind, and fit for the Sport of your Place; his Name is *Tray*, and is very free for the Water; and if he hath any Fault, it is being a little too eager, but he is young, and may be brought to what you please to have him. I hope my Sister *Mary* is well, to whom pray give my kind Love, and also be pleased to accept of my Duty to yourself, which is the Present needful from,

<div align="right">

Sir, your most Dutiful Son,

and humble Servant,

Anthony Addlehill.

</div>

The Answer.

Pemsey, 5th Dec. 1768.

Dear Toney,

I Received your Letter of the 4th Instant, and I take Notice of your dutiful Respect and kind Wishes for my Health, which, I thank God, I perfectly enjoy at present, as I wish and hope you do yours.—I received your Present of the Dog; but the poor Cur was almost starved, having (as I suppose) had nothing on the Road; but he is now in good Condition, and hath been try'd as to his Mettle, and find he is a good one. I have sent you by the Carrier half a Dozen wild Ducks, which *Tray* fetch'd when I had shot them. Your Sister *Molly* remembers her kind Love to you, and hath sent you a Turkey, and a Chine of Bacon, to which I wish you (and your Friends, if you invite any) a

<div align="right">good</div>

good Stomach. With my Blessing and Prayers to God for you, conclude your tender and very

<div align="right">

Loving Father,
Andrew Addlehill.
</div>

P. S. We have a great many
Wild Fowl in our *Level*, so that
you may expect another Present
of that Kind in a little Time.

Note, *That these four short Lines are called the Postscript, because they are writ after, when the Body of the Letter is done.*

A Letter from a Young Man to his Uncle.

Honoured Uncle,   *Norwich, Dec.* 7, 1768.

S I R,

THE many kind and courteous Things that you have done for me, oblig'd me in Point of Gratitude, as *well* as Duty, to return you my most humble Thanks, and to offer you my poor, but real and hearty Service, in the Affair between you and Mr. *A. B.* of this Place: And if *you'll* please but to communicate to me your Intentions, and give me your Directions therein, I shall observe and follow them with all Punctuality; and will from Time to Time give an exact Account of my Negociations in that Affair.

So expecting to receive your Commands by the first convenient Opportunity, I rest and remain,

<div align="right">

Sir, your most obliged Nephew,
and very humble Servant,
Brian Bing.
</div>

The Uncle's Answer.

<div align="right">

London, 8th *Dec.* 1768.
</div>

Nephew,

I Take your Offer of Service to me in the Business between me and Mr. *A. B* of your City, very kindly, and think none fitter to adjust that Affair than yourself; but I am *unwilling* to go to Law, and had rather, much rather, that you would endeavour to bring him to some reasonable Accommodation; for in such Contests the Winner is a Loser at the Upshot. So if I can bring him to any reasonable Terms, I *shall* be very glad: You understand the Affair,

<div align="right">

C 3   and
</div>

and fo I *shall* commit it *wholly* to your difcreet and good
Management, being perfuaded that you'll do for me as for
yourfelf: So I remain your Loving,

And Affectionate Uncle.
Bazil Bing.

A Letter from a Niece to her Aunt.

London, 9th Dec. 1768.

Madam,

THE Trouble I have already given you, puts me to
the Blufh, when I think of intruding again on your
Goodnefs; but Neceffity, that frequently puts us upon
what we have not always a Mind to, and forces us againft
our Inclinations, is now the Motive that induces me to be
thus troublefome. Pray dear Madam, excufe me, if I once
more beg your Affiftance in this Time of my unlucky Mif-
fortune, and I fhall ever have a grateful Remembrace of
your Goodnefs to me; and I hope I fhall be one Time or
other in a Capacity of making fome Returns of the many
Obligations your Goodnefs hath conferred upon me, your
moft refpectful Niece,

And humble Servant,
Penelope Pinch.

A Letter of proffer'd Affiftance to a Friend.

Dear Friend,

I Should be falfe to true Friendfhip, if I fhould neglect
or caft off my Friend in Adverfity; I hearing that you
are under fome Misfortune, and, at prefent fomewhat
pinch'd with Want, I fend you thefe Lines for your Con-
folation, defiring you to bear up againft your ill Luck
with as much Prefence of Mind as you can; for affure
yourfelf I fhall fuddenly follow this Epiftle in Perfon, and
come, I hope, opportunely enough to your Affiftance;
'till which Time, take Courage, and be affured that you
fhall not be difappointed of timely Help, from dear
Friend,

Your's, in Reality,
Timothy Timely.
A Brother

A Brother to a Sister.

Dear Sister,

THE great Distance and long Absence of me from you (tho' I have not wanted good company) makes me very solicitous concerning your Welfare. Natural Affection inclines me strongly to have you in Remembrance, tendering your Health and Welfare in every Respect as dear as my own ; and there is nothing at my Command, but, if you request, it shall be freely yours. Notwithstanding the Distance, I purpose (God willing) to make you a Visit very shortly, and had done it before now, but an urgent Occasion interpos'd, the Particulars of which being too long for a Letter, I shall acquaint you of when I see you. Pray give my due Respects to all Friends, particularly to honest Mr. *S. T.* and so in a hopeful Expectation of finding you all well at my Arrival, I conclude, and remain,

<div align="right">

Dear Sister,

Your affectionate Brother,

and humble Servant,

James Canter.

</div>

A Letter from a Youth at School to his Parents.

<div align="right">

London, 10*th Dec.* 1768.

</div>

Honoured Father and Mother,

I Received your kind Letter of the 4th of *November* past, and also the several Things therein mentioned, by the *Chichester* Carrier, for which I return you my most humble and hearty Thanks they coming very seasonably to the Relief of my Occasions.——I begin to make pretty good Improvement in my Learning now (tho' at the first it seem'd a-like irksome, and hard) and I hope to gain the Point at last, for which you sent me hither. Pray, dear Parents, accept of my most humble Duty to yourselves, and kind Love pray remember to my Brothers, and Sisters, and to my quondam Play-fellows, particularly to *Jacky Rattlebrains,* and tell him I hope by this Time he begins to be a little serious.——This being all at present from,

<div align="right">

Honoured Parents,

Your dutiful Son, and humble Servant,

Nathaniel Serious.

</div>

From an Apprentice to his Friends.

Honoured Father and Mother,

BY thefe I let you know, that by your good Care and Conduct I am well fettled, and am very well pleafed with my Station, and could not but in Duty return you my hearty Thanks in a grateful Acknowledgment of your Love and tender Care of me ; I will endeavour to go thro' my Bufinefs chearfully ; and having begun well, I hope I fhall perfevere fo to do to the End, and that I may be a Comfort to you hereafter, and in fome Meafure make a Return of your Love and Kindnefs to me, who am,

> *Your moft dutiful and obedient*
> *Son, and Servant,*
> Daniel Diligent.

A Letter of Recommendation.

S I R,

THE Bearer hereof *Francis Faithful*, I fend to you as one whofe Honefty you may rely on, and my Experience of his Conduct and Fidelity gives me a certain kind of Confidence, in recommending him to you ; but you know me, Sir, and I believe you cannot in the leaft think that I would recommend any one to you, that I had the leaft Umbrage of Sufpicion or Doubt concerning their Probity. I am with due Refpect,

> *Sir, your real Friend,*
> *and humble Servant,*
> George Generous.

A Daughter to a Mother, in Relation to Marriage.

Honoured Mother,

WITH all Duty, Humility and Refpect, I addrefs myfelf to you in thefe Lines, hoping they will find you in perfect Health both of Body and Mind, for which I am never wanting in my Prayer to implore. As I would act nothing that is very material, without your Knowledge, Confent, and Approbation, I thought it my Duty to acquaint you of a Matter of the greateft Weight and Importance, pardon me, if I blufh to name it, *viz.* that of my Marriage ; the Perfon (as I think) is well deferving of me,

or

or one much better; it is Mr. *A. B.* of *C.* You know
both him and his Character, *viz.* one ſober, diligent and
good humour'd; but however I ſhall ſubmit to your good
Pleaſure and Guidance in an Affair of ſuch momentuous
Concern, and remain,

<div align="right">

Honoured Mother,
Your dutiful Daughter,
and very humble Servant,
Mary Modeſty.

</div>

To a Country Chapman.

<div align="right">

London, 11th *Dec.* 1768.

</div>

Mr. *Francis Fairdealer,*

YOU and I have formerly had Trading together, and
it is not my Fault that we do not continue ſo to do;
for aſſure yourſelf, I have a great Value and Reſpect for
you, and on that Account none ſhall be more ready to o-
blige you in what I may; and pray let us once more re-
aſſume our Dealings together; and you ſhall find, that for
any Goods you have Occaſion for in my Way, none ſhall
uſe you more kindly than,

<div align="right">

Sir,
Your real Friend, and humble Ser-vant,
Titus Tradewell.

</div>

A Letter of Congratulation.

S I R,

IF you were but ſenſible how much I am affected with
the good and moſt acceptable News that I hear of your
good Fortune, you would conclude that the Joy that ſur-
prizes me for the ſame, is equal to yours that enjoy ſo
happy a Turn of Providence: I could expreſs myſelf fur-
ther on this Theme, and enlarge exceedingly on ſo plea-
ſing a Subject; but let this at preſent ſuffice, till I have a
more favourable Opportunity of expreſſing my Joy to you
perſonally: In the Interim, I am truly,

<div align="right">

Sir,
Your ſincere Friend,
and very humble Ser-vant,
Ralph Real.

</div>

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<div align="right">

A Let-

</div>

A Letter of Enquiry of Health.

Hammersmith, 12*th Dec.* 1768.

S I R,

I Not hearing from you in such a Length of Time as
from the 11th of *June* last to this Time, I am there-
fore under a great Concern for you, left some Misfortune
of Sickness, or some other Accident, hath happened to
you, or to some one of your Family; my Uneasiness
thereon, occasions my giving you the Trouble of these
Lines, which I wish may find Things with you better than
my Fears suggest; however to put me out of Pain, be
pleas'd to let me know the Certainty with what convenient
Speed you can; and thereby you'll very much oblige,

Sir,
Your cordial and real Friend,
and very humble Servant,
Peter Pitiful.

A Letter by Way of Petition to a Friend.

Honoured Sir,

I Am uncertain whether my late Misfortunes have come
to your Knowledge; however, I most humbly presume
on your good Nature, being assured by sundry Examples
of your Compassion, that you will think of, and take Pity
on the Distressed; therefore, as an Object truly deserving
Compassion, I most humbly implore, and petition you to
confider the many Losses and Disappointments that I have
met with in my unlucky and wayward Fortune, which
have reduced me to such necessitous Circumstances, that
I cannot possibly proceed in my Affairs: You was pleased
once to stile me your Friend, and so I was indeed; and so
I would most certainly be now, and shew it by a signal
Proof of Kindness, if our Circumstances were changed,
by standing between you and Misfortune, and screening
you from the malevolent and inauspicious Influences of
crofs-grain'd Stars. I doubt not, Sir, but your Generosity
and Goodness is as great; and I hope, with all Humility,
you will be pleased to interpose your good Offices, &c.
between unlucky Fortune, and,

Sir,
Your very humble Servant,
Lawrence Luckless.

A Letter

A Letter of Friendship.

Dear Friend,

IT is now a long Time (as I account it) since you and I have had any mutual Converse by Letter, which to me is a great Unhappiness; and really, if Distance did not somewhat excuse, I should be apt to tax you with Unkindness; but, however, perhaps you may not have the same Conveniency of Writing at your Place (for want of Postage) as we have at ours, and on that Account, I shall not insist on your Infringement of Friendship; but the chief Purport of these is to enquire of your Welfare, and to have an Answer given to, *Sir,*

Your real Friend,
and very humble Servant,
Kendrick Kindly.

A Letter of Correspondence.

S I R,

YOURS of the 5th *ult.* is now before me; in answer to which, I positively declare, That Mr. *A. B.* hath not been with me to present the Bill of Exchange that you mention in your Letter of Advice to me, and therefore there can be no just Cause of Protest, or any other Charge, put on, *Sir,* *Your humble Servant,*

John Innocent.

It is as proper to know how to subscribe, and how to direct, as it is how to write a Letter.

SUBSCRIPTIONS.

To his most Excellent Majesty, or, *to his most Sacred Majesty,* &c. *To the Queen's most Excellent Majesty,* &c.
To the Prince, To his Royal Highness, &c.
To the Princess, To her Royal Highness, &c.
To Spiritual Lords.
To his Grace the Lord Archbishop of Canterbury, or,
To the most Reverend Father in God, &c.
To other Bishops,
To the Right Reverend Father in God, &c.
To the Inferior Clergy,
To the Reverend Mr. A. &c. or, *To the Reverend Doctor,* &c.
To Temporal Lords,
To his Grace the Duke of, &c. *to the Right Honourable the Marquis of Halifax. To the Right Honourable the Earl*

of

of Suſſex.   To the Right Honourable Lord Viſcount Aſhburnham.

Sons of Nobility,

Muſt be dignified (tho' not immediate Heirs) with the Title of *Honourable,* as being their Due by Birth.

To a Baronet, *Honourable,* by Virtue of his Patent, or *Right Worſhipful* ; and alſo to a Knight, *Right Worſhipful.* To an Eſquire, *Worſhipful.*—Every Privy Counſellor, tho' not a Nobleman, hath the Title of *Right Honourable.* All Embaſſadors have the Stile of *Excellency* ; as hath alſo the Lord Lieutenant of *Ireland,* and the Captain General of His Majeſty's Forces. The Lord Mayor of *London,* during his Mayoralty. hath the Title of *Right Honourable.* And the Sheriffs, during that Office, have the Title of *Right Worſhipful.* All Mayors of Corporations have the Title of *Eſquires,* during their Office.

For the Beginning of Letters.

To the King ; *Sir,* or *May it pleaſe your Majeſty.*
To the Queen ; *Madam,* or *May it pleaſe your Majeſty.*
To the Prince ; *Sir,* or *May it pleaſe your Royal Highneſs.*
To the Princeſs ; *Madam,* or *May it pleaſe your Royal Highneſs.*
To a Duke ; *My Lord,* or *May it pleaſe your Grace.*
To a Dutcheſs ; *Madam,* or *May it pleaſe your Grace.*
To a Marquis ; *My Lord,* or *May it pleaſe your Lordſhip.*
To a Marchioneſs ; *Madam,* or *May it pleaſe your Ladyſhip.*
To an Earl, Viſcount, or Baron ; *Right Honourable,* or *May it pleaſe your Lordſhip.*
To their Conſorts ; *Madam,* or *May it pleaſe your Ladyſhip.*
To a Knight ; *Sir,* or *Right Worſhipful.*
To his Lady ; *Madam,* or *May it pleaſe your Ladyſhip.*
To a Mayor, Juſtice of the Peace, Eſquires, &c. *Sir,* or *May it pleaſe your Worſhip.*

At ſubſcribing your Name, conclude with the ſame Title you begun with ; as *My Lord, your Lordſhip,* &c.

Of Secret Writing.

HERE it may not be improper to ſay ſomething of Secret Writing ; to which Biſhop *Wilkins,* in his Book of *Mathematical Magick,* ſpeaks largely ; but it is principally concerning Writing in Cypher, which requires great Pains, and an uncommon Share of Ingenuity, both in Wri-
ters,

ters, and Readers. But however I shall shew two or three particular Ways, that are very pretty and amusing, and also very easy both as to Cost and Pains. And,

First, If you dip your Pen in the Juice of a Lemon, or of an Onion, or in your own Urine, or in Spirits of Vitriol, and write on clean Paper whatever you intend, it *shall* not be discerned till you hold it to the Fire, and then it will appear legible. And if with any of the aforementioned, you write on your Skin, as on your Arm, the Back of your Hand, &c. it shall not be seen *till* you burn a Piece of Paper, and with the Ashes rub on the Place, and then it *will* appear very plain. And this I have experienced and try'd, and therefore can say, *Probatum est.*

Another Way is, When you write a Letter that you intend shall not be discovered, but to those you think fit ; is first to write your Thoughts on one Side of your Letter with black Ink, as usual (but it ought to be on thin Paper) and then on the contrary Side, go over the said Matter that you would have secret, with a clean Pen dipp'd in Milk ; and that Writing shall not be read without holding it to the Fire, as mentioned above, and then it *will* appear *legible,* in a bluish Colour.

A third Method, is to have two Pieces of Paper of equal Size, and the uppermost cut in chequered Holes or Squares, big enough to contain any Word of six or seven Syllables, and in these Squares write your Mind in regular Sense ; and then take of the said chequered Paper, and fill up the Vacancies with Words of any Kind, which will render it perfect Nonsense, and not capable of being read, to any Purpose of Intelligence. And transmit and send the said uppermost, or chequered Paper, or another exactly of the same Form, to your Correspondent ; whereby he shall by laying it nicely on your said Letter, read your intended Sense, without being perplexed with the Words of Amusement intermixed, which makes it altogether unintelligible.

Or again, you may write to your Friend in proper Sense, with common Ink, and let the Lines be at so commodious a Distance, that what you intend to be secret, my be written between them with Water, wherein Galls have been steeped a little Time (but not long enough to tincture the Water) and when dry, nothing of the Writing between the said Lines can be seen ; but when it is to be read, you must, with a fine Hair Pencil, dipp'd in Coperas Water, go between the
said

said Lines, and so you make it legible. *Note,* This Way will give no ground for Suspicion, because the Letter seemeth to carry a necessary Sense in those Lines that are set at such a proper Distance, &c.

Of ARITHMETICK.

AFTER Writing, the next necessary Step towards qualifying a Person for Business, is the Understanding that truly laudable and most excellent Accomplishment, the noble Science of *Arithmetick*; a Knowledge so necessary in all the Parts of Life and Business, that scarce any Thing is done without it.

In my Directions for its Attainment, I shall proceed with such Plainness of Method and Familiarity of Stile, as shall render it easy to be understood, and conspicuous to the meanest Capacity.

And first of *Notation* and *Numeration.*

In *Notation,* we must note or observe that all Numbers are expressed by, or composed of, these ten Figures or Characters following, *viz.*

One, Two, Three, Four, Five, Six, Seven, Eight, Nine, Cypher.
　1　　2　　3　　4　　5　　6　　7　　8　　9　　0

Nine of these are called significant Figures, to distinguish them from the *Cypher,* which of itself signifies nothing; but as it is placed (in whole Numbers) serves to increase the Value of the next Figure or Figures that stand before it; as 3 is but Three; but before the *Cypher,* thus 30, the 3 becomes Thirty, &c. But in Decimal Fractions, the (0) decreases the Value of the Figure behind it; for therein, 3 is three Tenths of any Thing; but by placing 0 before it, thus, 03, it is decreased from 3 tenth Parts, to three hundredth Parts of any Thing, &c.—We are to note, That every one, or any of the abovementioned nine Figures, or Digits, have two Values; one certain, and another uncertain; the certain Value is, when it stands alone by itself; the uncertain is, when joined or placed with other Figures or Cyphers; for when any one of these Figures stands alone, they signify no more than their own simple Value; as 5 is but Five, 4 but Four, 6 but Six, and 3 no more than Three &c. And this is the certain Value of a Figure: But when another Figure or Cypher is annexed, they then are increased in their
Value

Value ten times ; as 5, or 5 Units, or Ones, to 5 Tens or Fifty, 4 to 4 Tens or Forty, 6 to 6 Tens or Sixty, and 3 to 3 Tens or Thirty ; as thus 51, Fifty-one ; 42, Forty-two ; 63, Sixty-three ; 34, Thirty-four, &c. Again, if any of the said Figures stand in the third Place towards the Left-hand, they signify so many Hundreds as they expressed Units or ones ; as 500 is Five Hundreds, 400 Four Hundreds, 600 Six Hundreds, and 300 Three Hundreds, &c. If any of them possess the 4th Place towards the Left-hand, they are so many Thousands as they contain Units. And so any, or every Figure, encreases by a Ten-fold Proportion from the Right-hand to the Left, according to the Place it is found or stands in ; so that 5 may be but Five, or Fifty ; Five Hundred, or Five Thousand. In the first Place 5 ; in the second 50 ; in the third 500 ; in the fourth Place 5000, &c. And therefore, this is the uncertain Value of a Figure. But the true Value of Figures in Conjunction, may be fully learnt and understood by the following Table.

The Numeration Table.

12 C Thouf. of Mil.	11 X Thouf. of Mil.	10 Thoufand of Mil.	9 C of Millions.	8 Ten of Millions.	7 Millions.	6 C of Thoufands.	5 Tens of Thouf.	4 Thoufands.	3 Hundreds.	2 Tens.	1 Units.	Hund.Thouf. of Mil.	Hundreds of Mil.	Hund. of Thoufands.	Units or Ones.
1	2	3	4	5	6	7	8	9	0	1	2	123	456	789	012
	1	2	3	4	5	6	7	8	9	0	1	12	345	678	901
		1	2	3	4	5	6	7	8	9	0	1	234	567	890
			1	2	3	4	5	6	7	8	9		123	456	789
				1	2	3	4	5	6	7	8		12	345	678
					1	2	3	4	5	6	7		1	234	567
						1	2	3	4	5	6			123	456
							1	2	3	4	5			12	345
								1	2	3	4			1	234
									1	2	3				123
										1	2				12
											1				1

For the easier Reading of any Number, first get the Words at the Head of the Table by Heart ; as Units, Tens, Hundreds,

dreds, Thousands, &c. and appply'd thus, 75, five Units, five, and 7 Tens, Seventy, that is Seventy-five. Again, 678; 8 Units, Eight; 7 Tens, Seventy; and 6 Hundreds, six hundred; that is, Six hundred seventy eight. Once more 3456; 6 Units, six; five Tens, fifty; 4 Hundreds, four Hundred; 3 Thousands, three Thousand; together, Three thousand four hundred fifty-six. Read the 4th Line of the Table downwards, viz. 123456789; here the Valuation of the Figures is from the Right-hand to the Left, as 1 in the ninth Place is Hundreds of Millions; but to be read from the Left-hand to the Right; thus, One hundred twenty three Millions, four hundred and fifty-six thousand, seven hundred eighty-nine. But any Number may yet be read more intelligibly, viz. by Stops, thus, Make a Comma after every third Figure or Cypher, beginning at the Right-hand, and so on towards the Left, making a Stop after every third Figure or Chypher, as abovesaid; thereby distinguishing every third Place into Hundreds, as Hundreds of Units, Hundreds of Thousands, Hundreds of Millions, and Hundred Thousands of Millions, &c. And for Trial, let's read the frst Line of the Table; the last Place in Valuation is Hundred Thousands of Millions, and to be pointed into Periods thus, 123,456,789,012; and read thus; One hundred twenty-three thousand, four hundred fifty-six Millions, seven hundred eighty-nine thousand, and twelve; that is, no hundreds but twelve. Again, read the following Number, viz. 276,245,678,921,460; here the first Point or Period is between 4 and 1, and the last between 2 and 6, and to be read thus; 276 Millions of Millions, 245 Thousands of Millions, 678 Millions, 921 Thousands, 460 Units, or Ones. And thus may any Number be read with ease, though a large one: And thus are large Numbers or Sums expressed, or set out in the Exchequer, Bank, Lottery Tickets, &c. as thus No. 224, 156——19, 478——and 420,000, &c. The foregoing *Table of Numeration* is on the Right-hand distanced out into Periods, for the easier Reading thereof.

Numbers to be read or written, viz.

96, *Ninety-six.*
242, *Two hundred forty-two.*
7924, *Seven thousand 9 hundred 24.*
54006, *Fifty-four thousand and six.*
524707, *Five hundred 24 thousand 707.*
4706240, *Four millions 706 thousand 240.*
62700472, *Sixty-two millions 700 thousand 472.*
474960204, *Four hundred 74 million 960 thousand 204.*
4214007042, *Four thousand 214 millions 7 thousand 42.*
44214800240, *Forty-four thousand 214 millions 8 hundred thousand 240.*

Of Numerical Letters.

Sometimes Numbers are expressed by Letters; and it is necessary to understand them, for the readier Reading the Dates of Years, frequently used at the Foot of Title Pages of Books, and on Funeral Monuments, and in Roman History, *&c.*

I *Signifies One.*
V *Five.*
X *Ten.*
L *Fifty.*
C *An hundred.*
CC *Two hundred.*
D or IↃ *Five hundred.*
M or CIↃ *A Thousand.*
IↃↃ *Five Thousand.*
CCIↃↃ *Ten Thousand.*
IↃↃↃ *Fifty Thousand.*
CCCCIↃↃↃↃ *A Hundred Thousand.*

IↃↃↃↃↃ *Five Hundred Thousand.*
CCCCCIↃↃↃↃↃ *Ten Hundred Thousand, or a Million.*
MDCCLXIX, *expresses this present Date of* 1769, M *being One Thousand,* D *Five Hundred,* CC *Two Hundred, and* LXIX, *Sixty-nine; together, One Thousand Seven Hundred and Sixty-nine.*

A D D I T I O N.

IS the putting together two or more Numbers or Sums, so as their total Value may be discovered, or known.

Herein we must always observe to set the Numbers to be added, orderly one under the other; that is, Units under Units, Tens under Tens, Hundreds under Hundreds, *&c.* as in the subsequent Examples.

Addition

Addition of Numbers of one Denomination.

Yards.		Gallons.			Pounds.					
							x of			
T.	U.	H.	T.	U.	Th.	Th.	H.	T.	U.	
2	4	7	5	6	5	7	9	6	2	
4	2	4	3	2	3	9	7	4	4	
6	8	5	7	8	6	7	2	2	2	
8	6	6	9	6	7	9	6	7	4	
2	4	4	2	2		2	4	9	2	
4	2	6	7	8			3	9	0	
2 8 6		3 5 6 2			2 4 7 4 8 4					

In Addition of simple Numbers, whether it be *Yards*,
Gallons, *Pounds*, or any Thing else, remember to carry 1 for
every 10 that you find in the first Row or Rank of Figures,
being Units, to the next Row of Tens; and the like from
the Rank of Tens to the Row of Hundreds, &c. and what
ever it makes in the last, you must set it down, amount to
what it will.

The Numbers above are set down in order, as before di-
rected; that is, Units under Units, Tens under Tens, &c.
as may be plainly understood, by being indicated at the
Head of each Row, or Rank with Units, Tens, Hundreds,
&c. Then in casting up each Example, to know its Total,
I begin at the Right-hand, or Unit's Rank, of the first Ex-
ample, and say, 2 and 4 is 6, and 6 is 12, and 8 is 20,
and 2 is 22, and 4 is 26; in which Row there are two
Tens and 6 over; wherefore I set down 6 just under its own
Rank, and carry 2 to the next or last Row, and say, 2 that
I carry and 4 makes 6, and 2 is 8, and 8 is 16, and 6 is
22, and 4 is 26, and 2 is 28; and it being the last Row I
set down the Amount, *viz.* 28; so that the Total Number
of Yards is found to be (by this Method) at the Bottom
286. And the next or second Example, is found by the
same Method to be 3562 Gallons. And in the third and
last Example, the Total Number of Pounds is found by the
same Way to be 247484. And so the Total of any other
Example of the same kind, *viz.* simple Numbers of one
Denomination, may be found. *Note,* That when any of
the Ranks amount to just 10, 20, 30, 40, 50, &c. then
you must set down the 0, under its proper Rank, and carry
either

either 1, 2, 3, 4, or 5, according to the Number of Tens that you find, to the next Row; and so you will always do, when it so happens, whether in the first, second, or third Row; or in any other, except the last, where what it amounts to must be set down, without any Reserve or Carriage in the Mind, because there is no other Row or Rank to carry to, as was hinted before.

And so much for *Addition of Numbers of one Denomination*, which never varies from what has been said above; serving strictly to keep the critical, and nicely setting down in perpendicular Order your several Numbers that Units may precisely and directly stand under Units, Tens under Tens, &c. as hath fully been declared before. The next in Order of Course, is *Addition of Numbers of several Denominations*, or *Addition of Money*.

As we in *England*, or *Great-Britain*, keep our Accounts in Pounds, Shillings, and Pence, and Parts of a Penny; so you are to note, That

> 4 *Farthings make* 1 *Penny*,
> 12 *Pence* 1 *Shilling*, and
> 20 *Shillings* 1 *Pound*.

And here also you are strictly to observe, and with the same Punctuality to mind, that Pounds be set directly under Pounds, Shillings under Shillings, Pence under Pence, and Farthings under Farthings; as in the Examples hereafter following.

But before you proceed, it will be necessary to have the following Tables by Heart, for the readier Knowledge how many Shillings there are in so many Pence, and apprehending how many Pounds are contained in so many Shillings, &c.

Pence,	s.	d.		s.	l.	s.
20 is	1	8		30 is	1	10
30 —	2	6		40 —	2	0
40 —	3	4		50 —	2	10
50 —	4	2		60 —	3	0
60 —	5	0		70 —	3	10
70 —	5	10		80 —	4	0
80 —	6	8		90 —	4	10
90 —	7	6		100 —	5	0
100 —	8	4		110 —	5	10
110 —	9	2		120 —	6	0
120 —	10	0				

The

The Uſe of theſe Tables is this; whenever you are caſting up any Example, or Sum of Money, you begin at the Right-hand (as before in Sums of one Denomination the Place of Pence, and ſuppoſe the Rank, Row, or Denomination of Pence amounts, from the Bottom to the Top, to 56; then your Table of Pence tells you, that 50*d.* is 4*s.* and 2*d.* 6 over is 4*s.* 8*d.* If to 92*d.* the Table tells you that 90*d.* is 7*s.*-6*d.* and 2*d.* over is 7*s.* 8*d.* And if to 81*d.* the Table ſhews that 80*d.* is 6*s.* 8*d.* and 1*d.* more makes 6*s.* 9*d.* &c.

The *Shillings Table* ſerves to lead you to a quick Recollection how many Pounds there are in ſo many Shillings; as, admit the Rank of Shillings ariſe to 57*s.* The Table ſays that 50*s.* is 2*l.* 10*s.* and 7*s.* over makes 2*l.* 17*s.* If to 84*s.* the Table declares that 80*s.* is juſt 4*l.* and 4*s.* over makes 4*l.* 4*s.* If to 112*s.* the Table tells you that 100*s.* is 5*l.* and 12*s.* more makes 5*l.* 12*s.* &c.

Addition of Money.

Money Owing, and Money Received, as follows.

	(1)	*l.*	*s.*	*d.*		(2)	*l.*	*s.*	*d.*
	Mr. *Andrews*	4	12	6		*Tobacco*	46	16	9
	Mr. *Bent*	7	06	9		*Sugar*	79	16	0
	Mr. *Crawley*	4	12	0		*Indigo*	42	18	3
Ow.	Mr. *Dupper*	6	17	7	Rec.	*Broad Cloth*	66	12	4
to	Mr. *Edlin*	5	06	6	for	*Canary*	90	16	0
	Mr. *Franklin*	4	12	3		*Port Wine*	84	07	6
	Mr. *Gregory*	6	00	0		*Rice*	24	12	0
	Mr. *Fiſher*	5	15	4		*Logwood*	60	10	0
		45	02	11			496	02	10

Note, That *l.* ſtands for Pounds, *s.* for Shillings, *d.* for Pence, and *qr.* for Farthings; in regard that *Libra* ſignifies a Pound, *Solidus* a Shilling, *Denarius* a Penny, and *Quadrans* a Farthing.

I begin with the firſt Example of Money Owing, and ſay, 4 and 3 is 7, and 6 is 13, and 7 is 20, and 9 is 29, and 6 make 35 Pence; now 30 Pence, according to the Table, is 2*s.* and 6*d.* and 5*d.* makes 2*s.* and 11*d.* I ſet down 11 exactly under the Rank of Pence, and ſay 2 Shillings that I carry (which I do to the Rank of Shillings) and 5 is 7,

and

and 2 is 9, (for I only take the Units Rank of Shillings) and 6 is 15, and 7 makes 22, and 2 is 24, and 6 is 30, and 2 makes 32; and now being come to the Top of the Sum, and it making 32, I come down with the Tens of Shillings, saying, 32 and 10 is 42, and 10 is 52, and 10 is 62, and 10 is 72, and 10 makes 82 Shillings; and the Table telling me that 80 Shillings is 4 Pounds, I know therefore 82s. is 4l. 2s. wherefore I set down the odd 2s. just under the Row of Shillings, and carry 4 Pounds to the Pounds; saying, 4 that I carry and 5 is 9, and 6 is 15, and 4 is 19, and 5 is 24, and 6 is 30, and 4 is 34, and 7 is 41, and 4 makes 45 Pounds; so that the Total of those several Sums of Money, due to those several Persons, amounts to 45l. 2s. 11d. as in the Example.

In the second Example of Money received, I begin at the Right-hand (as in all *Additions, Subtractions,* and *Multiplications,* we do, and ought so to do, working from the Right-hand to the Left; but in *Division* you begin the Operation at the Left, and work towards the Right) and say, 6 and 4 is 10, and 3 is 13, and 9 makes 22; and 22 Pence being 1s. and 10d. I set down 10d. and carry 1s. to the Shillings; saying 1 that I carry, and 2 is 3, and 7 is 10, and 6 is 16, and 2 is 18, and 8 is 26, and 6 makes 32; then I come down with the Tens, saying 32 and 10 makes 42, *&c.* and find at the Bottom it comes to 102 Shillings; which making 5l. 2s. I set down 2s. and carry 5l. to the Pounds; saying, 5 that I carry, and 4 is 9, *&c.* I find that at the Top it amounts to 36, wherefore I set down 6 exactly under its own Rank, *viz.* the Rank of Units of Pounds, and carry 3 for the 3 Tens that are in 30; for at all Times in the first Denomination of Addition, whether of Money, Weight, or Measure, that is in the Denomination of Pounds, Tuns or Yards, you must cast them up as Sums of one Denomination; that is, for every Ten carry One to the next, *&c.* saying, 3 that I carry and 6 is 9, and 2 is 11, and 8 is 19, *&c.* and find that at the Top it comes to 49; wherefore I set down 49 before the 6, and the total Amount of the Money received for those particular Goods or Wares sold, is 496l. 2s. 10d.

More Examples for Practice.

		l.	s.	d.		10	20	12	4		l.	s.	d.
⎧	Mr. *Money*	17	12	6½	l.	146	12	3	½		4	10	6
	Mr. *Gant*	26	10	2		278	10	9			0	07	9
	Mr. *Harn*	50	00	0		46	16	6			1	00	0
	Mr. *James*	44	12	8½		100	00	0			1	01	0
	Mr. *King*	60	14	0		72	12	4			0	04	6
Money due from ⎨	Mr. *Smith*	29	16	6¼		69	16	6	¼		0	10	0
	Mr. *Monk*	16	10	0		460	12	6			4	14	4
	Mr. *Napper*	20	00	0		49	10	0			0	07	6
	Mr. *Oliver*	27	11	4½		7	12	4	½		0	01	6
	Mr. *Perkins*	17	04	0		22	10	0			0	02	6
	Mr. *Quinton*	20	10	3		164	12	9			3	10	9
⎩	Mr. *Roper*	46	16	8		75	10	6			1	10	0

Total, 377 18 3 ——— 1494 16 6 ¼ —18 00 4

Over the middle Example there are Numbers set, to de-
note what you must stop at, if you cannot cast it up without.

Addition of Avoir-du-pois Weight.

By this Weight are weighed all Kinds of Grocery Goods
or Wares, or Goods subject to waste; as *Tobacco, Sugars,
Fruit* and *Drugs*; as also *Butter, Cheese, Allom, Tallow,
Flesh, Iron, Brass, Copper, Lead, Tin*, or *Pewter, Pitch,
Tar, Rosin, Hemp, Flax, Soap, Salt*, and all Kind of *Gar-
bled Goods*; that is, those Goods that have Dust, Dross, or
Waste.

A Table of this Weight is as follows, viz.

	Marked.
	dr. Drams
4 Quarters make 1 Dram	*oz.* Ounces
16 Drams 1 Ounce	*lb.* Pounds
16 Ounces 1 Pound	
28 Pound 1 qr. of a hundred	
Weight, or 112 *lb.* -	*qrs.* Quarters
4 Quarters 1 Hundred Wt.	C. Hundreds
20 Hundred Wt. 1 Tun	T. Tuns

			Small Weight.
20 4 28	28	28	10 16 16
C. qrs. lb.	C. qrs. lb.	C. qrs. lb.	lb. oz. dr.
5—1—16	24—1—12	9—1—16	24—11—12
4—2—24	42—2—00	4—3—26	42—14—15
6—3—06	16—1—12	7—1—00	64—10—11
7—0—12	25—3—24	5—3—27	29—09—10
9—1—20	19—0—20	4—3—00	16—12—13
6—2—00	26—1—22	2—2—02	27—13—14
39-3—23	154—3—06	34—3—15	206—09—11

In the firſt of theſe Examples I begin at the Right-hand, to wit, at the Denomination of Pounds, and ſtop at every 28, ſo many Pounds making a Quarter; that is, at every 28 I make a Speck on my Nail (not in the Sum, for that Way is not proper or handſome) and I find two 28's, and 22 *lb.* over; wherefore I ſet down 22, and carry 2 *qrs.* to the Quarters, and adding them up find them 11, which is 2 Hundred and 3 *qrs.* over; wherefore I ſet down 3 and carry 2 to the Hundreds; which alſo added up, make 39; ſo that the Total Weight is 39 *C.* 3 *qrs.* and 22 *lb.* &c.

And for the Example of *Small Weight*, there I ſtop at 16 and 16, and at 10 in the Pounds, and find the Total 206*lb.* 9 *oz.* and 11 *Drams.* There's no Occaſion for ſtopping, but only at 28 in the Great Weight, and at 16 and 16 in the Small.

☞ *Note*, That in weighing at the Water-ſide, or elſe-where, they do not weigh by the Ton in *Great Weight*, though ſome Goods are ſold by it, as *Iron, Logwood, Cheeſe,* &c. but by Hundreds, Quarters, and Pounds, and after-wards computed by Tons, *&c.*

Addition of Troy Weight.

By this Weight are weighed *Jewels, Gold, Silver, Pearl, Electuaries,,* and *Liquors*; a Pint of Water, Wine, *&c.* be-ing a Pound, and the uſual Denominations are *Pounds, Ounces, Penny-weights* and *Grains*, as in the following Ta-ble, *viz.*

Note, That $\begin{cases} 24 \ \textit{Grains make 1 Penny-weight,} \\ 20 \ \textit{Penny-weights 1 Ounce, and,} \\ 12 \ \textit{Ounces 1 Pound, Troy.} \end{cases}$

Note also, That 25 *lb.* is a Quarter of a Hundred by this Weight, 100 *lb.* is one hundred Weight, and 20 hundred one Ton of Gold or Silver.

Examples of TROY WEIGHT.

6 Ingots of Silv. wt. *viz.*				10 12 20 24			10 20 24	
N°.	*l.*	*oz.*	*pw.*	*gr.*	*lb.*	*oz.*	*pw.*	*gr.*	*oz.*	*pw.*	*gr.*

N°.	*l.* oz. pw. gr.	*lb.* oz. pw. gr.	oz. pw. gr.
1 Wt.	4 05 12 10	14 06 10 11	204 10 14
2	5 04 16 17	24 10 11 12	96 07 17
3	3 11 19 20	21 06 07 17	100 11 12
4	4 06 07 12	21 10 12 14	56 16 20
5	5 01 11 12	16 11 12 13	212 10 23
6	4 11 12 13	21 07 06 17	96 19 12
	28 06 00 12——	121 05 01 12——	767 17 02

In the Denomination of *Grains* I stop at 24, and find it to amount to 3 *Penny-weights* and 12 *Grains* over; wherefore I set down 12 *Grains* and carry three *Pennyweights* to the *Pennyweights*; then I say, 3 that I carried and 2 is 5, and 1 is 6, and 7 is 13, and 9 is 22, and 6 is 28, and 2 is 30; and then coming down with the Tens, I say, 30 and 10 is 40 and 10 is 50; &c. just as I do in *Addition of Money*; (for as there 20s. make a Pound, so here 20 *Pennyweights* make an Ounce) and find it to come just to 80; now in 80 there are just 4 *Twenties*, or 4 *Ounces*; wherefore I set down 00, and carry 4 to the *Ounces*, and find them to amount to 42; which makes 3 *Pounds* and 6 *Ounces* over; wherefore I set down 6, and carry 3 to the *Pounds*; saying, 3 I carry to 4 is 7, and 5 is 12, &c. and find they come to 28; so the Total is 28 *l.* 06 *oz.* 00 *pw.* 12 *gr.* and so of the Rest.

How to prove ADDITION.

IN all *Additions*, whether of simple Numbers, that is, Numbers of one Denomination; or in Examples compound, that is, of diverse Denominations, as *Pounds, Shillings, Pence* and *Farthings*; or, *Tuns, Hundreds, Quarters,* and *Pounds,* Great Weight; or *Pounds, Ounces* and *Drams,* Small Weight; *Pounds, Ounces, Penny-weights* and *Grains,* Troy Weight; I say, in any of the Examples above-mentioned, the truest and best Method of Proof is to cast the same downwards (beginning at the Top) as you did the same upwards, beginning at the Bottom, and if it proves the

the fame Total, the Work is infallibly right, and beyond any Contradiction; and is much better, and more fenfible than the common Method ufed in Schools, of making two Totals, by omitting the upper Line in the Second, which is altogether impracticable in real Bufinefs. I might here alfo give the feveral Examples of other *Additions*, fuch as *Apothecaries Weight, Cloth, Liquid, Dry*, and *Long Meafures, Time*, &c. but the Method ferves for any of them, having refpect to the feveral Tables of Quantity belonging to thofe feveral Denominations of Addition above mentioned, which are as follows, *viz.*

A TABLE of the Parts of Apothecaries Weight.

Marks.

20 *Grains*,	1 *Scruple.*	Ɔ	a Scruple.
3 *Scruples*,	1 *Dram.*	ʒ	a Dram.
8 *Drams*,	1 *Ounce.*	℥	an Ounce.
11 *Ounces*,	1 *Pound.*	℔	a Pound.

By thefe Weights they compound their Medicines; but they buy and fell their Drugs by *Avoirdupois Weight.*

CLOTH MEASURE.

4 *Nails*, or 9 *Inches*, 1 *qr.* of a *Yard.*
4 *qrs.* or 36 *Inches*, 1 *Yard.*
5 *qrs.* or 45 *Inches*, 1 *Ell English.*
3 *qrs.* or 27 *Inches*, 1 *Ell Flemish.*
6 *qrs.* or 54 *Inches*, 1 *French Ell.*

A TABLE of WOOL WEIGHT.

Note, That 7 *lb.* makes 1 *Clove*; 2 *Cloves*, or 14 *lb.* 1 *Stone*; 2 *Stones* or 28 *lb.* 1 *Tod*; 6 *Tod* and a Half 1 *Wey*, or 182 *lb.* 2 *Weys*, or 364 *lb.* 1 *Sack*; and 12 *Sacks* 1 *Laſt*, or 4368 *lb.* 240 *lb.* 1 *Pack of Wool.*

Note, That 1 *lb.* 2 *oz.* 12 *pw. Troy*, is equal to a Pound *Avoirdupois.* And a Pound *Troy* is about 13 *oz.* 2 *Drams* and a Half *Avoirdupois.*

				l. s. d.
A Pound of Weight *Troy*	} of Silver is worth {			3 02 2
A Pound Wt. *Avoirdupois*				3 15 3½
£. 100 { in Gold	} weighs {	1 11¾	} *Avoirdp.Wt.*	
in Silver		26 04		

A Pound *Avoirdupois* is heavier than a Pound *Troy*: But an Ounce *Troy* is heavier than an Ounce *Avoirdupois.*

D

A Table

A Table of Liquid Measure.

Liquid Measure is of two Sorts, *viz.* One for *Wine, Bran-dy*, &c. and the other for *Beer* and *Ale.*

Wine, &c.

8 Pints one Gallon,
42 Gallons 1 Tierce,
63 Gallons 1 Hogshead,
84 Gallons 1 Puncheon,

2 Hogsheads 1 Pipe or Butt,
2 Pipes or Buts 1 Tun, or 252 Gallons.

Note, That *sweet Oyl* hath 236 Gallons to the Tun: But Oyl from *Greenland* hath 252 Gallons to the Tun.

Note, The Wine Gallon contains 231 Cubic or solid Inches, by which all Liquids are measured, except Beer and Ale.

Beer Measure.

8 Pints 1 Gallon.
9 Gallons 1 Firkin,
2 Firkins 1 Kilderkin,

2 Kilderkins 1 Barrel, or 36 Gallons,
1 Barrel and Half, or 54 Gallons, 1 Hogshead.

Ale Measure.

8 Pints 1 Gallon,
8 Gallons 1 Firkin of Ale, Soap or Herrings,
2 Firkins 1 Kilderkin,

2 Kilderkins 1 Barrel, or 32 Gallons,
1 Barrel and Half, or 48 Gallons, 1 Hogshead.

Note, The *Beer* and *Ale* Gallon are the same, *viz.* 282 solid Inches; but with this Difference, *i. e.* the Barrel of Beer contains 1228 Cubic Inches, or 4 Gallons more than the Barrel of Ale.

In a Tun of Wine are
2 Pipes or Butts,
6 Tierces,
252 Gallons,
504 Pottles,
1008 Quarts,
2016 Pints.

In a Pipe or Butt are
2 Hogsheads,
3 Tierces,
126 Gallons,
252 Pottles,
504 Quarts,
1008 Pints.

In a Puncheon are
84 Gallons,
168 Pottles,
336 Quarts,
672 Pints.

In a Hogshead are
63 Gallons,
126 Pottles,
252 Quarts,
504 Pints.

In a Barrel of Beer are
2 Kilderkins,
4 Firkins,
36 Gallons.

72 Pottles,	4 Firkins,
144 Quarts,	32 Gallons,
288 Pints.	64 Pottles,
In a Barrel of Ale are	128 Quarts,
2 Kilderkins.	256 Pints.

Dry Measure.

2 Pints 1 Quart,	Sea Coal are heaped or
2 Quarts 1 Pottle,	else there are 5 Pecks
2 Pottles 1 Gallon,	to the Bushel.
2 Gallons 1 Peck,	In the Last are
4 Pecks 1 Bushel Land Mea-	2 Weys,
sure,	10 Quarters,
5 Pecks 1 Bushel Water Mea-	80 Bushels,
sure,	320 Pecks,
4 Bushels 1 Comb, or half	1280 Pottles,
Quarter,	2560 Quarts,
2 Combs 1 Quarter,	5120 Pints.
4 Quarters 1 Chaldron,	In a Wey are
5 Quarters 1 Wey,	5 Quarters,
2 Weys 1 Last, or 10 Quarters	40 Bushels,
4 Fatts or Vatts, or 36 Bu-	160 Pecks,
shels, of Sea Coal, 1 Chal-	320 Gallons,
dron ; and 21 Chaldron is	640 Pottles,
accounted a Score in the	1280 Quarts,
River of *Thames* ; Salt and	2560 Pints.

Note, By an Act *Anno* 1712, the Bushel is 2178 Cubic Inches, and a Gallon of this Measure is 272 Cubic Inches.

Long Measure.

3 Barley-Corns 1 Inch,	40 Poles, or 220 Yards, 1
12 Inches 1 Foot,	Furlong,
3 Feet 1 Yard,	8 Furlongs one Mile, or
3 Feet 9 Inches 1 Ell Engl.	1760 Yards,
5 Feet a Geometrical Pace,	3 Miles one League,
5 Yards and Half, 1 Pole,	20 Leagues, or 60 Miles 1
Perch, or Rod,	Degree ; and 360 Degrees
6 Feet 1 Fathom, or 2 Yards,	the supposed Circumfe-
	rence of the Earth and Sea.

In a Mile are

8 Furlongs,	5280 Feet,
320 Poles,	63360 Inches,
1760 Yards,	190080 Barley Corns.

D 2

Land

LAND MEASURE.

5 Yards and Half, 1 Pole, Perch or Rod.
40 Poles make 1 Rod, or quarter of an Acre.
160 Poles in Length, and 1 in Breadth, is 1 Acre.
80 Poles in Length, and 2 in Breadth, 1 Acre; and,
40 Poles in Length, and 4 in Breadth, 1 Acre.
4 Poles in Length make 1 Chain.
10 Chains in Length, and 1 in Breadth, make 1 Acre.

TIME.

60 Seconds 1 Minute,	*In a Year are*
60 Minutes 1 Hour,	
24 Hours 1 Day natural,	31557600 Seconds,
7 Days 1 Week,	525960 Minutes,
4 Weeks 1 Month,	8766 Hours,
13 Months, 1 Day, and 6	365 Days, 6 Hours.
Hours, 1 Solar Year.	

Note, The Year is also divided into 12 Calender Months,
which contain 365 Days, according to this good old Verse, *viz.*
Thirty Days hath September, April, June *and* November,
February *hath* 28 *alone, and all the Rest Thirty and One.*

SUBTRACTION.

THE next Rule in *Arithmetick* is *Subtraction* (or com-
monly called *Substraction*) and this Rule teaches to
take a lesser Number, or Sum, out of a greater, and shew-
eth the Remainder, Rest, Excess, or Difference.

Note always to place the lesser Number under the greater
(with the same Care and Order as in *Addition*) so the Units
may stand under Units, Tens under Tens, &c. and the Re-
mainder under the Line is the Difference sought: And such
Difference being added again to the lesser Number, shall
make the greater Number, and is a certain Proof of the
said Rule.

A GENERAL RULE.

Whatever you used to stop at in *Addition* (whether of one
Denomination or of several) the same you must borrow in
Subtraction, when need requires: Remembering to pay, or
carry 1 to the next Place towards the Left-Hand. *Example:*
Suppose Mr. *Andrews* owes to Mr. *Baker* 323 *l.* whereof
Mr. *A.* hath paid to Mr. *B.* the Sum of 146 *l.* in Part;
what remains due to Mr. *Baker* ?

Answer 177 *l.*

Here

Here the leſſer Number 146, ſtands under the greater 323 ; and to find the Remainder or Sum reſting due, I ſay, 6 from 3 I cannot ; but 6 from 13 (for you muſt always borrow 10 of the next Figure in the ſame under Line, and put it to the Figure or Cypher that ſtands directly over the Figure you ſubſtract) and there remains 7 ; then 1 that I borrow and 4 is 5, for as I borrowed 10 (or 1) out of 4, ſo I muſt pay the ſaid 1 or 10 (for ſo it really is, becauſe of the Decuple Proportion of Increaſe from the Right-hand to the Left) to the ſaid Figure 4 again, as above hinted : I ſay, 5 from 2 I cannot ; but 5 from 12 (borrowing 10, and putting it to the over Figure 2, as above directed) and there remains 7 ; then 1 that I borrowed and 1 is 2, from 3 the over Figure, and there reſts 1, and ſo the Example is done ; and by it is ſhewn that *A.* ſtill owes *B.* 177 Pounds, as appears in the Work ; and for Proof of its Verity, add 177 the Remainder, to 146 the leſſer of the two given Numbers, and it will make 323, being the ſame with the great Number, or Sum of Money firſt due ; and therefore, a ſure Proof of the Truth and Certainty of the Rule. And as *Subſtraction* is proved by *Addition*, ſo may *Addition* be proved by *Subtraction* ; for if the two aforeſaid Numbers, *viz.* 323 and 146, are added, their Total is 469, from which if you deduct 146, the Remainder will be the great Number ; or if you ſubſtract 323 from the ſaid 469, the Remainder will be 146, the leſſer Number.

All Examples or Sums in *Subſtraction* of one Denomination, are performed as above, they varing not at all : But however, once more for the better Explanation. Admit, a great Sheep-Maſter hath in all 6904 Sheep, and takes out of them 2490 to diſpoſe of at Market ; how many doth he leave behind ? To know this, ſet them down thus :

From—6904 the Greater Number,
Take—2490 the Leſſer Number.
Anſwer 4414 the Remainder.

Here I ſay, o from 4, and there remains 4 ; then 9 from nothing (or o) I cannot ; but 9 from 10 (putting or making the o 10) and there remains 1 ; then 1 that I borrow and 4 make 5 ; and 5 from 9, and there reſt 4 ; and laſtly, 2 from 6, and there remains alſo 4, (for I borrowed none, and therefore there's no Occaſion of paying) ſo that he leaves behind him juſt 4414 ; which put to the Number he takes

to Market, makes the Number he first had, *viz.* 6904, and shews the Deduction to be true, and the Answer right.

More Examples for Practice.

	l.	Yards.	Gallons.	Pounds.
From	4796	3700	47200	479672
Take	2929	1976	31976	97694
Rem.	1867	1724	15224	381978
Proof.	4796	3700	47200	479672

Any Distance of Time that is from any particular Date of a Year, may be known by subtracting that Date from the present Date of the Year.

Example.

```
I. — 1770              II. — 1770
   1666 the Fire of London.   1588 the Spanish Invasion.

Since 104              Since  182
```

```
          III. — 1770
              1605 Gun-powder Treason,

          Since 165
```

Subtraction in divers Denominations.

Of Money.

	l.	s.	d.
Due ——	9	02	6
Paid ——	6	16	4
Rests due,	2	06	2

Suppose Mr. *Campion* owes Mr. *Darnell* 9 *l.* 2 *s.* 6 *d.* and Mr. *C.* hath paid Mr. *D.* in Part 6 *l.* 16 *s.* 4 *d.* what remains due to Mr. *Darnell?* Answer, Due to Mr. *Darnell* 2 *l.* 6 *s.* 2 *d.* as by this Example.

Again

	10 20 12 4
	l. *s.* *d. q.*
Sold for —	242—16—3 ¾
Paid in Part	174—12—6 ½
	—————————
Anſwer —	68—03—9 ¼
	—————————

Again, Mr. *Edwards* ſells to Mr. *Francis*, *Spaniſh* Wool to the Value of 242 *l.* 16 *s.* 3 *d:* ¾. and pays preſent Money, and by a Note on Mr. *Goodwin*, the Sum of 174 *l.* 12 *s.* 6 *d.* ½ ; what Money remains unpaid from Mr. *Francis?* Anſwer, 68 *l.* 3 *s.* 9 *d.* ¼.

In the firſt of theſe Examples I ſay, 4 *d.* from 6 *d.* and there remains 2 *d.* then 16 *s.* from 2 *s.* I cannot, but borrowing one Integer of the next Denomination, or 1 Pound which is 20 *s.* I ſay 16 from 20, and there reſts 4, and taking the over Number 2, and putting it to the Remainder 4 makes 6 : wherefore I put down 6 in the Place of Shillings, and ſay, 1 that I borrow and 6 is 7 ; now 7 *l.* from 9 *l.* there remains 2 *l.* ſo the Money reſting due to Mr. *Darnell*, is 2 *l.* 6 *s.* 2 *d.* as in the Example.

In the ſecond Example I ſay, 2 Farthings (or a Halfpenny) from 3 Farthings, and there remains 1 or ¼, which I ſet down in its proper Place, *viz.* under the Denomination of Farthings ; then 3 from 1 cannot, but 6 from 12, (as marked over the Denomination) and there remains 6, and 3 *d.* over it make 9 *d.* which I place under the Line in its right Place, *viz.* of Pence ; then 1 that I borrowed (that is 1 Shilling) and 12 is 13 ; 13 *s.* from 16 *s.* and there reſts 3, which I likewiſe ſet down under its own Rank ; then 4 from 2 I cannot, but 4 from 12 (borrowing 10, as in *Addition*, 1 carry 1 for every 10) and there reſts 8 ; then 1 that I borrow and 7 makes 8, 8 from 4 I cannot, but 8 from 14, and there remains 6 ; ſo that the Sum remaining due is 68 *l.* 3 *s.* 9 *d.* ¼. as in the Work. And for its Proof you muſt add the Remainder, 68 *l.* 3 *s.* 9 *d.* ¼. to the leſſer, or under Sum, 174 *l.* 12 *s.* 6 *d.* ½. and it makes 242 *l.* 16 *s.* 3 *d.* ¾. the Sum firſt due, and is a Proof of the Work's being right. See the Example above.

D 4

More

More Examples for Practice.

	l.	s.	d.		l.	s.	d.		l.	s.	d.
	10	20	12 4		10	20	12		10	20	12 4
Due —	174	16	6 $\frac{1}{4}$		74	10	4		2471	07	0
Paid - -	97	12	4 $\frac{3}{4}$		29	12	9		1976	16	6 $\frac{1}{2}$
Remain	77	04	1 $\frac{1}{2}$		44	17	7		494	10	5 $\frac{1}{2}$
Proof	174	16	6 $\frac{1}{4}$		74	10	4		2471	07	0

	l.	s.	d.		l.	s.	d.		l.	s.	d.
	10	20	12		10	20	12		10	20	12
1st Due ---	74	00	00		274	16	6		796	00	0
Paid —	46	12	10		197	19	4		279	11	7
Balance	27	07	02		76	17	2		516	08	5
Proof —	74	00	00		274	16	6		796	00	0

Sometimes a Sum owing may be paid at several Times ; then the several Payments must be added together, and their Total deducted from the Sum first due, as in this and the Examples following.

Owing — 266 l.

$$
\text{Paid at Times}
\begin{cases}
20 \\
15 \\
30 \\
90 \\
17 \\
24 \\
60
\end{cases}
$$

Paid in all 256 deduct

Rests due 10

Proof 266

	l.	*s.*	*d.*		*l.*	*s.*	*d.*
More due	249—12—0			Received	100—10—0		

Received at several Times,				Paid to several Persons,			
	24—12—6				6—16—0		
	9—14—9				10—00—0		
	20—00—0				5—12—6		
	16—16—6				20—10—0		
	22—10—2				7—09—6		
	13—12—6				9—08—6		
	7—16—4				7—12—6		

Received in all	115—02—9	Paid in all	67—09—0
Refts due	134—09—3	Remains in the Bag.	33—01—0
Proof	249—12—0		

Avoir-du-pois Weight.

	10 Tuns.	20 C.	4 qrs.	28 lb.		10 C.	4 qrs.	28 lb.		10 lb.	16 oz.	16 dr.
From	44	12	1	10		246	2	12		146	02	10
Take	39	14	2	06		164	3	22		97	10	12
	4	17	3	04		81	2	18		48	07	14
Proof	44	12	1	10		246	2	12		146	02	10

Troy Weight.

	10 lb.	12 oz.	20 pwt.	24 gr.		10 oz.	20 pwt.	24 gr.
From	462	04	10	11		1247	10	12
Take	196	09	06	16		976	16	17
Remain	265	07	03	19		270	13	19
Proof	462	04	10	11		1247	10	12

And so much for *Subtraction*; which Method will serve for any Denomination whatever, having respect to the several Tables of Quantity, as before hinted in *Addition*.

MUL-

MULTIPLICATION.

THE next Rule in order is *Multiplication*, and perhaps the moft ferviceable Rule in Bufinefs, for its quick Difpatch, of all others in *Arithmetick*, and I fhall endeavour to fhew, by its Nature, Quality and Ufe, that it is fo. And,

1. *Multiplication* is a Rule that by two Numbers given, teacheth to find out a third, which fhall contain either of the two as many Times as the other containeth Units.

2. In fome Cafes *Multiplication* is alfo a comperdious Working of *Addition*.

3. It ferves likewife to bring great Denominations into fmall, as Pounds into Shillings, Pence, or Farthings.

4. Having the Length and Breadth of a plain Superficies, we find its Contents in Square Meafure.

5. By *Multiplication* we find by having the Value of one Thing, or the Wages of one Perfon, how to know the Value of many Things, or the Wages of many Perfons.

In *Multiplication* we are particularly to take Notice of thefe three Terms, *viz.*

The $\left\{ \begin{array}{l} \textit{Multiplicand,} \\ \textit{Multiplier, and} \\ \textit{Product.} \end{array} \right.$

1. The *Multiplicand* (generally the greater of the two Numbers) is the Number to be multiplied.

2. The *Multiplier*, generally the leffer of the two Numbers) is the Number to multiply with.

3. The *Product*, or Refult of the Work, being the Anfwer.

But before any Procedure can be made in this Rule, it is neceffary to have the following Table by Heart, and that very perfectly.

The Multiplication Table.

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3		9	12	15	18	21	24	27	30	33	36
4			16	20	24	28	32	36	40	44	48
5				25	30	35	40	45	50	55	60
6					36	42	48	54	60	66	72
7						49	56	63	70	77	84
8							64	72	80	88	96
9								81	90	99	108
10									100	110	120
11										121	132
12											144

This Table is fo plain and eafy, that there is no need of Direction; for 't's but guiding the Eye from the Side Column to the Head, and in its oppofite Angle or Square you have the Anfwer; and contrariwife, by directing the Eye from the Head and Side, you have the fame; as 6 times 9 is 54, and 9 times 6 is 54; fo 7 times 8 is 56, and 8 times 7 is 56, &c. And fo it ought to be got by heart for the more dexterous Readinefs in multiplying.

Now for Application.

Example 1. How many is 3 times 472? Which must be fet down as in the Margin; and then fay, 3 times 2 is 6; which place under 3 the Multiplier; then 3 times 7 is 21; fet down 1 under 7, and carry 2 for the two Tens; as in *Addition of one Denomi-*

472
3
1416

mination

mination; then 3 times 4 is 12, and 2 is 14; which set down, and the Product 1416; that is, 3 times 472 makes so much; and may be proved by *Addition*, by setting down 472 three times, in additional Order, and casting it up, which makes the Assertion good in the second Definition, that this Rule compendiously performs the Office of Addition. Likewise the foregoing Example agrees with the first Definition; for as 3 times 472 makes 1416, so doth 472 times 3 make the same, *viz.* 1416.

Example 2. Again how many makes 742 multiplied by 4?

742 *Multiplicand.*
4 *Multiplier.*
——
2968 *Product*
——

Here I say, 4 times 2 is 8, and 4 times 4 is 16, 6, and carry 1; and 4 times 7 is 28, and 1 is 29, which set down; so the whole Product is 2968, as *per* Example.

More Examples of one Figure in the *Multiplier*, are these *viz.*

Multiplicat.	7420	4444	7460	90704	56789
Multiplier	5	6	7	8	9
Product	37100	26664	52220	725632	511101

Compound Multiplication.

Is when the *Multiplier* consists of two, three, four or more Figures, or Figures and Cyphers.

And here you must begin with that Figure which is in the Place of Units of the Multiplier, and go through the whole *Multiplicand*, by multiplying each Figure of it first by that said Unit Figure, then by the next, to wit, by the Figure in the Place of Tens of the *Multiplier*, then with the third, *&c.* to the last; always remembring to place the first Figure of every Product or Line, (for you will ever have as many as you have significant Figures in the *Multiplier*) I say remember to place the first Figure of each Line exactly and perpendicularly under the Figure you multiply by; and then add the several Lines or Products together, which so collected gives the total Product required, as in the Examples following, *viz.*

Example 1.

How many is, or are, 23 times 7426? firſt I   7426
begin with the Unit Figure 3 in the *Multiplier*,   23
ſaying 3 times 6 is 18; 8 (which I ſet directly
under 3 by which I multiply) and carry 1; then   22278
3 times 2 is 6, and 1 is 7; then 3 times 4 is   14852
12; 2 and carry 1; then 3 times 7 is 21,
and 1 is 22: And ſo I have done with the firſt   170798
Figure of the *Multiplier*, *viz.* 3. Then I go to
the next, that is 2, and twice 6 is 12; 2 and carry 1,
(which 2 is placed in a direct Line under 2, and the Multiply-
ing Figure) then twice 2 is 4, and 1 is 5, then twice 4 is 8;
and laſtly, twice 7 is 14, which I ſet down: Then I add the
two Products together, ſaying 8 is 8, &c. and the Total is
the right and proper Product, or Reſult of the Multiplica-
tion, *viz.* 170798. Again,

Example 2.

What is the Reſult or total Product of ——— 527527
              Multiplied by ——— 285

It will appear too prolix, and altogether   2637635
unneceſſary, to give more verbal Directions,   4220216
nay, indeed nauſeous Tautalogy, ſince thoſe   1055054
given above are ſufficient; and therefore the
Learner is referred to the Obſervation of the   150345195
Example, as alſo to thoſe two that follow, *viz.*

       527535   275827
       15728   19725

     4220280   1379135
     1055070   551654
     3692745   1930789
     2637675   2482443
      527535   275827

    829707048o   5440687575

When Cyphers are intermixed with Figures in the *Multi-
plier*, then multiply by the Figures as above; and when you
come to a Cypher in the *Multiplier*, then ſet down another
Cypher exactly and perpendicularly under it, then begin the
Multiplicand again with the next Figure to the Cypher in the
                                               Multi-

Multiplier, and go through it in the fame Line, placing the firft Figure of that Product next to the Cypher towards the Left-hand, but then heed muft be taken that the next Figure or Cypher of the next Line muft be fet down one Degree farther towards the Left-hand, and not immediately under the laft Figure fet down next to the Cypher: As in the following Examples may be fully underftood.

24393	7864371	327586
402	23604	6030
———	———	———
48786	31457484	9827580
975720	471862260	19655160
———	23593113	———
9805986	15728742	1975343580
	———	
	185630613084	

When you have a Cypher or Cyphers in the *Multiplier*, at the Beginning towards the Right-hand, then fet it, or them, backwards from the Place of Units towards the Right-hand; and when you have multiplied by the Figure or Figures, annex the Cypher or Cyphers: *As in thefe Examples.*

4762	47962	4632
70	400	2600
———	———	———
333340	19184800	27792
		9264
		———
		12043200

If you have Cyphers both in the *Multiplicand* and *Multiplier*, then neglect the Cyphers in both, and multiply by the Figures, and annex the Cyphers at laft: *As in thefe Examples.*

42600	42300	376400
220	12000	2400
———	———	———
852	846	15056
852	423	7528
———	———	———
9372000	507600000	903360000

When

When you are to multiply by 10, 100, 1000, or 10000, it is only adding or annexing so many Cyphers to the *Multiplicand*, that is, either 1, 2, 3, or 4 Cyphers, and the Work is done. *Example*, Suppose I am to multiply 375 by the Numbers above; if I multiply it by 10, then I join o to 375, and then it makes, or the Product is 3750: If by 100, then I annex oo, and then it makes 37500: If by 1000, I put to it ooo, and then it produces 375000. And lastly, if by 10000, I then add oooo, and then it makes 3750000 &c. And thus may any Number be multiplied, when the *Multiplier* consists of a Unit with any Number of Cyphers, and done by Inspection only, without any formal setting down the *Multiplicand*, with a Line drawn under it, &c.

Thus far for Direction in the Manner how to multiply; the next will be to shew the Uses of *Multiplication* in real Business, and how to apply it on proper Occasions, *viz.*

1. Suppose you want to know how many Half Crowns there are in 246 *l.* you know that 8 Half Crowns make 1*l.* wherefore set them down thus.

$$246\,l.$$
Multiply by.   8

Answer   1968

Again, in 1968 Half Crowns, how many Pence ? 30 Pence in Half a Crown.

59040 Pence the Answer.

And this serves to make out, that great Denominations are brought into smaller by this Rule, according to the third Definition.

2. Admit you wanted to know the Contents of a large Shuffle-board Table, 34 Feet long, and 4 Feet wide; multiply 34 the Length, by 4 the Breadth, and the Answer will be 136 Square Feet for the true Contents of such a Table. And this agrees with the 4th Definition of this Rule.

3. If I know the Value of a Yard of Broadcloth to be 12 Shillings, what is the Value of 220 Yards of the said Cloth in Shillings ?

Mul-

$$
\begin{array}{r}
220 \\
\text{Multiply by } 12 \\
\hline
440 \\
220 \\
\hline
2640 \text{ Shillings, or } 132 \text{ Pounds.}
\end{array}
$$

If the Wages of 1 Seaman be 23 Shillings a Month, what is the Wages of 250 Seamen for the same Time ?

Multiply by 23

$$
\begin{array}{r}
750 \\
500 \\
\hline
\end{array}
$$

Answer　5750 Shillings, or 287*l.* 10*s.*

And these two Examples accord with the fifth Definition, or Use of this Rule.

And thus much for plain *Multiplication*.

I shall, in the next Place, say some small Matter concerning *Multiplication of Money*, and a little of its Use, and so conclude this Rule.

Multiplication of Money.

Multiplication of Money (what most would learn above any Thing) hath great Affinity with *Addition of Money*; the same Method being taken in carrying from one Denomination to the next, viz. from Farthings to Pence, from Pence to Shillings, and from Shillings to Pounds. And as in *Addition* (and other *Multiplications*) you begin at the Right-hand, and proceed towards the Left; so here you begin at the least Denomination, which is also at the Right-hand.

This Method of accompting, is the most apt and expeditious of all others, for small Quantities; and therefore extremely necessary in making Bills of Parcels, &c. and is, beyond all Contradiction, as sure and certain as any way whatsoever.

The General Rule.

Is always to multiply the Price by the Quantity.

The first Step is, for Quantities from 2 to 12; and this is done by one Multiplier; as in the Examples following.

Example

Example 1.

	l.	*s.*	*d.*
Multiply ———————————————	7	12	6
(or 6 Pieces of Cloth at *l.* 7—12—6 *per* Piece) by		6	

45	15	0

Here I ſay 6 times 6 is 36 Pence, which is juſt 3*s.* I ſet down 0 in the Place of Pence, and carry 3*s.* to the Place of Shillings, (exactly the ſame as in *Addition of Money*) then 6 times 12 is 72, and 3 is 75*s.* or 3*l.* 15*s.* wherefore I ſet down 15 in the Place of Shillings, and carry 3 to the Pounds; then 6 times 7 is 42 and 3 is 45*l.* So the whole Amount of the 6 Cloths, at 7—12—6 *per* Cloth, is 45*l.* 15*s.* as in the Work, and very conciſe.

Example 2.

Again, how much is 9 times 13*s.* 4*d.* or what is the Amount of 9 Marks ?

In this Example I ſay, 9
times 4 is 36*d.* or 3*s.* I ſet
down 0, and carry 3 ; then
9 times 3 is 27, and 3 makes 30 ; I ſet down 00 and carry 3 (as in Multiplication of ſimple Numbers ;) then 9 times 1 is 9, and 3 is 12, which being the Tens of Shillings, conſequently they are Angels ; which being halved, make juſt 6*l.* and ſo much is the Value of 9 Marks, or any thing elſe at that Price, *viz.* 13*s.* 4*d.*

9

6—00—0 *Anſwer.*

Example 3.

Once more, What comes 12 Gallons of Wine at 5*s.* 4*d.* *per* Gallon ?

	s.	—	*d.*
	5	—	4
Here I ſay, 12 times 4 is 48 ; 0 and		12	
carry 4 ; then 12 times 5 is 60 and 4 is			
64*s.* or 3*l.* 4*s.*	*l.* 3	—4—	0

The next Degree or Step of Advance in this Way of Reckoning, is of Quantities exceeding 12, even to 12 times 12, or 144 ; all which as far as 144, are found in that excellent Table, the *Table of Multiplication*; which is a ready Help to all Purpoſes of Reckoning, and particularly in this Way ; and that you may proceed with Dexterity, you muſt be very ready in the ſaid Table, that you may be immediately apprehenſive what component Parts hit your Quantity propoſed, or pretty near it, (for any Quantity below 12
needs

needs no Recollection at all, as in two of the Examples foregoing) and then work accordingly; as 15 Yards at, &c. I readily know that 3 and 5, or 5 and 3, are to be my Multipliers. If to 21, then 3 and 7, or 7 and 3, as above. If to 30 then 5 and 6, or 6 and 5, also 3 and 10, or 10 and 3. If to 45, 48, 56, 66, 72, 96, &c. then 5 and 9, 6 and 8, 7 and 8, 6 and 11, 6 and 12, and 8 and 12, &c. are to be Multipliers, and exactly hit their several Quantities of which there are component Parts; and Examples of this Kind have two Multiplications for their Solution.

When the Quantity proposed is a Number irregular, or such a Number that no two Numbers in the Table can be found to answer it, then we must multiply by two such Numbers as come pretty near it, as is said above; and for the Number wanting, to make up the Number or Quantity proposed, multiply the given Price of one by the Number that is wanting; which will make three Products by three Multiplications; which last Product must be added to the foregoing Products resulting from two Multiplications, and the Total will be the Answer.

And first, I shall shew Examples of the second Step, *viz.* of regular Quantities that exceed 12, and are precisely answered at two Multiplications, such as mentioned above, *viz.*

What comes 15 Yards of Muslin to, at 3—5 . *per* Yard

3 and 5,

Here 3 times 5 is 15*d.* or 1*s.* and 3*d.* ——— 3 and carry 1*s.* then 3 times 3 is 9, and   10—3 1 is 10*s.* so the first Product is 10*s.* 3*d.*   5 which I multiply by 5, saying, 5 times ——— 3 is 15*d.* or 1*s* 3*d'.* 3 and carry 1; then   2—11—3 . 5 times 10 is 50, and 1 is 51*s.* or 2*l.* ——— 11*s.* So the whole Amount of 15 Yards, at 3*s.* 5*d. per* Yard, is 2*l.* 11*s.* 3*d.* And demonstrable thus, *viz.* If 10*s.* 3*d.* be the Value of three times 3*s.* 5*d.* then 5 times the Value of 10*s.* 3*d.* must of Necessity be 15 times the Value of 3*s.* 3*d.* because 5 times 3 is 15: And its Truth may be proved by *Additions* and *Multiplication*, thus; set down 3*s.* 5*d.* three times in additional Order, and put the three Lines together, and the Total of them multiply by 5, as before, and the Answer will be the same. Or set down 17*s.* 1*d.* (the Product of 3*s.* 5*d.* multiplied by 5) three times also, and

and add them together, and the total will be exactly the same with the Result by Multiplication; as in the following Specimen of Work.

(1)	(2)	(3)
s. d.	*s. d.*	*s. d.*
3—5	3—5	17—1
3—5	5	17—1
3—5	———	17—1
———	17—1	———
10—3	———	2--11--3
5		
———		
2--11--3		

Here the first of these two Proofs is worked by *Addition* and *Multiplication*, and the second by *Multiplication* (as *per* Margin) and *Addition*. Also,

By this we fee, that in all Examples under this Head, we are to pitch on two Numbers (for *Multipliers*) in the Table; which multiplied together, make the Quantity proposed; and then we are to multiply the Price by one of the Numbers (it matters not by which first) and then that Product is to be multiplied by the other Number, and the second or last Product will be the Answer.

Example 2.

Again, what is the Value of 21 Gallons of Brandy?

s. d.	In this Example I say, 7
at 7—9 *per Gallon.*	times 9 is 63*d*. or 5*s*. 3*d*.
7 and 3	I set down 3 and carry 5;
———	then 7 times 7 is 49, and 5
2—14—3	is .54*s*. or 2*l*. 14*s*. So the
3	first Product is 2*l*. 14*s*. 3*d*.
———	which I multiply by 3, and
8—02—9	that produces the last Product
	or Answer, *viz.* 8*l*. 2*s*. 9*d*.

Now follow a few more Examples of this Sort, without any verbal Directions, because I think those already given to be sufficient.

Example 3.

What comes 30 Ells of Holland to at

    s. d.
    3—7 *per Ell*
    10 and 3
    _____
    1—15—10
          3
    _____
Answer 5—07—6

Example 5.

56 Bushels of Wheat.

    s. d.
at 4—9
    7 and 8
    _____
    1—13—3
          8
    _____
Answer 13—06—0

Example 4.

45 Pound of Raw Silk

    s. d.
at 15—6 *per lb.*
    5 and 9
    _____
    3—17—6
          9
    _____
Answer 34—17—6

In the first Product of this Example I say, the half of 7 is 3 and half, or 3*l.* 10*s.* And in the last, the half of 15 is 7 and half, or 7*l.* 10*s.* &c.

Example 6.

    s. d.
72 Broad Pcs. at 23—6 *each.*
            12 and 6
    _____
    14—02—0
          6
    _____
    84—12—0

In the first Product the half of 28 Angels is 14*l.* &c.

Example 7.

108 *lb.* of Indigo Lahore,
at   7*s.*—8*d.*
        9 and 12
    _____
    3—9—0
        12
    _____
Answer 41—8—0

Example 8.

                    l. s. d.
96 C. of Currants, at —————— 2—13—6 *per* C.
                        8 and 12
    _____
    21—08—0
          12
    _____
Answer 256—16—0

The

The next Gradation of Advance, is of Quantities irregular, or of Numbers that are not to be anſwered preciſely at two *Multiplications :* In this Caſe, there ariſeth no Increaſe of Difficulty, but it is as eaſy as the Examples foregoing; only here you will have an Addition of one Line more, occaſioned by bringing down the Price of one to be added to the laſt Product, or elſe a Line more made by multiplying the Price by what is defective or wanting in the Number by two Multiplications to make up the propoſed Quantity compleat; as it may be of 2, 3, 4, 5, &c. as by the ſubſequent Examples may be ſeen and underſtood.

Example 1. What is the Product of 2*l.* 13*s.* 6*d.* multiplied by 39 ?

l. 2—13—6	Here I find that 6 mul-
6 and 6	tiplied by 6, makes 36;
	which is within 3 of the
16—01—0	Quantity propoſed; where-
6	fore I multiply by 6, and
	that Product again by the
96—06—0	other 6; the laſt Product is
8—00—6	96*l.* 6*s.* which is the Value
	of 36, but we want to know
104—06—0	the Value of 39; wherefore
	I multiply the Price of one,

viz. 2*l.* 13*s.* 6*d.* by 3 that is defective or wanting to make up 36 to 39, ſaying 3 times 6 is 18*d.* &c. And find that 3 times 2*l.* 13*s.* 6*d.* is 8*l.* 00*s.* 6*d.* which added to 96*l.* 6*s.* 0*d.* the Total gives the compleat Value of 39; for 36 and 3 makes 39. See the Work.

Example 2. What comes 79 C. wt. of Cheeſe to, at 28*s.* *per* C. weight ?

l. s. d.	In this Example I ſay, 7
28 0	times 0 is 0; then 7 times
7 and 11	8 is 56; 6 and carry 5;
	and 7 times 2 is 14, and
9—16—0	5 is 19; the Half of which
11	is 9 and half, or 9*l.* 10*s.*
	0*d.* So the firſt Product
107—16—0	is 9 *l.* 16 *s.* 0 *d.* which
2—16—0	multiplied by 11, pro-
	duces 107 *l.* 16 *s.* 0 *d.* or
110—12—0 *Anſwer*	the Value of 77; then
	for 2 wanting I multiply
	the

the Price by it, and that gives 2*l*. 16*s*. 0*d*. which added
to 107 *l*. 16 *s*. 0 *d*. which makes the whole Value of 79,
viz. 110*l*. 12*s*. 0*d*. as in the Work. Or, as there are no
Pence in the Price, you may multiply 28*s*. by
79 without bringing it into Pounds as you
work it, but omit it till the laft, and then cut
off or feparate the laft Figure or Cypher of the
Product towards the Right-hand, and halve
thofe towards the Left, which Half will be
Pounds, and the Figure cut off Shillings, as in
this Example.

```
            s.
            28
            79
          ——
           252
           196
          ——
          221,2
```

```
l.  110,12
```

The Half of 2, is 1, and the Half of 1 is 0, which 1
joined to the 2 fevered from 221, makes 12 ; fo the Anfwer
is 110*l*. 12*s*. as before.

Example 3. 112 Pound of Sugar as 5½ *per lb*. fet down
thus :

```
    s.   d.
        5½ per Pound
     10  and 10
   ——————
     4—07
     10
   ——————
   2—05—10
     05—06 the Product of 5d. ½ by 12 defective.
   ——————
   2—11—04 the Anfwer.
```

Here after I have multiplied by 10 and 10, the Parts of
100, there wants 12 ; wherefore I multiplied 5*d*. ½ by 12,
and it gives 5*s*. 6*d*. for 12 *lb*. at 5*d*. ½, which added to
2*l*. 5*s*. 10*d*. of the Value of 100, makes 2*l*. 11*s*. 4*d*. the
true Value of 112 *lb*. at 5*d*. ½ *per* Pound.

Example 4. 94 Stone of Beef, at 22*d.* or 1*s.* 10*d. per* Stone.

```
1 s.   10 d.
       10 and 9
   ─────────────
   18—04
        9
   ─────────
 8—05—00
 7—04
 ─────────
 8—12—04  Anſwer.
```

.Here what is wanting after the two Multiplications, is 4; wherefore I multiply 1 s. 10 d. (the Price) by 4, which produces 7 s. 4 d. to be added, &c.

Example 5. 97 C. $\frac{1}{2}$ of Raiſins.

```
 s.    d.
25—06 per C.
       9 and 10
─────────────
11—09—06
        10
─────────────
114—15—00
 8—18—06
 12—09 for the ½ C.
─────────────
124—06—03
```

After I have multiplied by 9 and 10, I multiply the Price 25 s. 6 d. by the Quantity wanting, and it produces 8 l. 18 s. 6 d. then for the Half C. I take Half of the Price, which is 12 s. 9 d. and then collect the three Lines, the Total of which is 124 l. 6 s. 3 d. for the Anſwer.

Note, From the laſt Example may be obſerved, that there is no need of too much Solicitude concerning coming ſo very near by two Multiplications, for there 7 is wanting to make up the true Quantity; nay, if the two Multiplications be ſhort by 20 or 12, it is near enough; for 'tis as eaſy to multiply the Price by 10 or 12, as by 2 or 3, and the Addition is the ſame.

Example 6. Once more ; What comes 110 C. ¾ of Hops to, at 4 *l*. 10 *s*. 6 *d. per* C.

l.	*s.*	*d.*	
4	—10	—06	
		10 and 10	
45	—05	—00	
		10	
452	—10	—00	
45	—05	—00	
2	—10	—03	
1	—02	—07½	
501	—02	—10½	Anfwer.

After I have multiplied by 10 and 10, which makes 100, I multiply the Price, 4 *l*. 10 *s*. 6 *d*. by 10 that is wanting, which gives the fame with the firſt Product, *viz.* 45 *l*. 5 *s*. 0 *d*. which ſtands under the Product by 100 ; and for the ¾ of a C. I take ½ of the Price, *viz.* firſt the Half, and then the Half of that Half, that is 2 *l*. 5 *s*. 3 *d*. and 1 *l*. 2 *s*. 7 *d*. ½; which four Lines added together, make 501 *l*. 2 *s*. 10 *d*. ½. for the Anſwer.

To prove Multiplication.

Whether of Simple Numbers, or of Money ; it is moſt ſurely done by *Diviſion* ; but before that is known, take this Method, *viz.* As you multiplied the *Multiplicand* by the *Multiplier*, ſo contrariwiſe multiply the *Multiplier* by the *Multiplicand* ; and if the Products are alike, the Work is right ; or otherwiſe one of them is wrong, and muſt be gone over again till they do agree.

Example 1.

365 Days in a Year.
24 Hours in a Day.

1460
730

8760

Here (reverſly) I ſay, 5 times 4 is 20 ; 0 and carry 2 ; 6 times 4 is 24, and 2 is 26 ; 6 and carry 2, and 3 times 4 is 12, and 2 is 14. Then 5 times 2 is 10 ; 0 and carry 1 ; 6 times 2 is 12, and 1 is 13 ; 3 and carry 1 ; and 3 times 2 is 6, and 1 is 7. Which Products added together make 8760, the Hours in a Year, without taking in the odd 6 Hours, which the Year doth conſiſt of more than 365 Days.

Example

Example 2.

| | 56 Gallons of Spirits at | I ſay here, twice 7 is 14 ; 2 |

56 Gallons of Spirits at I ſay here, twice 7 is 14 ; 2
 s. *d.*   and carry 1*s.* and 3 times 7 is 21,
 3 2*d. per* Gallon. and 1 is 22*s.* or 1*l.* 2*s.* Again,
  7 and 8   twice 8 is 16*d.* 4 and carry 1*s.* &
       twice 8 is 16 and 1 is 17*s.* 17
――――――― and carry 0 ; and once 8 is 8*l.*
1 02 2   Thus both theſe examples are the
   8   ſame in conſequence as if you
――――――― proceeded in the common and
8 17 4 Anſwer. regular Method of *Multiplication*
       and ſhews the Truth of the Ope-
       ration.

The next Rule in Order of Courſe, is

D I V I S I O N.

THIS Rule, though accounted the hardeſt Leſſon in *Arithmetick*, yet I ſhall make it eaſy and intelligible ſo the meaneſt Capacity.

The Uſe of this Rule is to know how many times one Number or Sum is contained in another ; as if it were aſk'd how often is 9 contained in 54 ; the Anſwer is 6 times ; or how many times 12 is there in 144 ? Anſwer 12 times.

As by *Multiplication* great Names or Denominations are brought into ſmall ; ſo contrarily by *Diviſion*, ſmall Names are brought into greater ; as Farthings (from one Gradation to another) into Pounds, Pounds Weight into Tuns Weight, and Gallons Liquid into Tuns Liquid, &c.

In this Rule we are to take particular Notice of theſe three certain Terms following, *viz.*

1.   *Dividend,* or Number to be divided.
2. The *Diviſor,* or Number by which we divide.
3.   *Quotient,* or Anſwer to the Work ; which ſhews how often the Diviſor is contained in the Dividend.

4. The *Remainder ;* which is an uncertain Branch of this Rule, becauſe there is ſometimes a Remainder, and ſome-times not. ☞ And you muſt particularly note, That the *Remainder* is ever of the ſame Name with the *Dividend,* and is always leſs than the *Diviſor ;* for if it be more, or equal to the *Diviſor,* the Work is wrong.

Diviſion is either Single or Compound ; *Single,* when the *Diviſor* conſiſteth of a ſingle Figure, and the *Dividend* of

E   two

two at moſt. Any of this ſort is anſwered by the *Multipli-cation Table*; as if 63 were to be divided by 7, the Anſwer will be 9 times. Here 63 is the *Dividend*, 7 the *Diviſor*, and 9 the *Quotient* or *Anſwer*.

Compound Diviſion is when the *Dividend* hath many, or more Figures or Cyphers than two, and the *Diviſor* one or more Figures or Cyphers, *&c*,

Example.

How many times 7 is there contained in 365 ? Or, how many Weeks in a Year ?

7) 365 (52

35
——
15
14
——
(1)

A general Rule for Working

Note {
1. Seek,
2. Multiply,
3. Subſtract.
}

Having ſet down the Example with two crooked Lines or half Parentheſis, one for the Diviſor, and the other for the Quotient, I begin according to the afore-mentioned general Rule for Working, by ſeeking or aſking how often I can take 7, the *Diviſor*, out of 36 the two firſt Figures of the *Dividend* (for I cannot take 7 out of 3, the *Quotient*, being never to begin with 0) and the *Anſwer* is 5 times ; wherefore I place 5 in the *Quotient*, and multiply the *Diviſor* 7, by it (as directed in the *General Rule*) ſaying 5 times 7 is 35, which I place under 36 ; and then thirdly, according to the ſaid Rule, I ſubſtract 35 from 36, and there remains 1 ; to which I bring down the next, or laſt Figure of the *Dividend*, *viz.* 5, and then there is 15 for a new *Dividend*, or *Dividual*, to work upon ; then I aſk or ſeek again, how oft 7 may be taken in 15 ? and the Anſwer is 2 times ; wherefore I put 2 in the *Quotient* next to the 5 ; by which 2 I alſo multiply the *Diviſor* 7, ſaying twice 7 is 14 ; which I ſet down under 15, and ſubſtract and there remains 1, which I place between two Semicircles thus, (1) as it ſtands in the Work ; where obſerve, That 365 is the *Dividend*, 7 the *Diviſor*, 52 the *Quotient*, or *Anſwer*, and 1 the *Remainder*. The *Quotient* declares that 7 is contained in 365, 52 times, and 1 over or remaining ; which I ſet over the *Diviſor*, thus, $\frac{1}{7}$, and ſignifies that there is one Seventh of a Week, or 1 Day, more than juſt 52 Weeks in a Year, or 365 Days ; which is eaſily to be found by
collecting

collecting the Days of each Calender Month as they ſtand in the Almanack.

You may note, That the ſaid $\frac{7}{7}$ is properly what is called a *Fraction*, or a Piece or Segment of the *Dividend*; but of this hereafter.

Note alſo, That if there had been more Figures or Cyphers in the *Dividend*, they muſt have all been brought down, one by one at a time (and never but one at a time) and (after *Subſtraction*) ſet to the *Remainder*; and if there remains 0, you muſt ſtill bring down but one Figure or Cypher at a time, and for every Figure or 0 ſo brought down, there muſt be a Figure or 0 placed in the *Quotient*, according to the times you can take the *Diviſor* out of the ſeveral *Dividuals* you make, by drawing down a Figure or Cypher at a Time out of the *Dividend*, till all be brought down, and the Work ended.

For a Specimen, let us divide 8060 Pounds of Tobacco equally among 8 Men.

8) 8060 (1007 *Quotient.*
  8...
  ———
  60
  56
  ———
  (4)

Here I ſay the Eights in 8 once; which I put in the Quotient, then the Eights in 0, 0 times; which I likewiſe put in the Quotient; then the Eights in 6, 0 times again; which is alſo placed in the Quotient, and there remains 6; to which I bring down 0, the laſt of the Dividend, and it makes 60; laſtly, the Eights in 60 7 times, and 7 times 8 is 56, from 60, and there remains 4; ſo the Quotient ſhews that each Perſon muſt have 1007 Pounds of Tobacco for his Share in the Dividend 8060, and there remains 4 Pounds over and above, which makes Half a Pound more due to each Man, becauſe 4 the Remainder is Half of 8 the Diviſor; and ſo the Work is done, the Quotient giving to each Man 1007 Pounds and a Half for his equal Share.

Note, That in the Operation, every time that you bring down a Figure or Cypher, you are to make a Point under it in the Dividend, to ſignify that ſuch a Figure or Cypher hath been brought down and done with, as may be obſerved in the foregoing Example.

Though this Way of Working is plain, and eaſy to be underſtood, yet it is ſomewhat tedious; and therefore I ſhew a quicker Way for Diſpatch when the Diviſor is a ſingle

E 2   Figure;

Figure; as shall be made conspicuous in these Examples following, *viz.*.

	I.	II.	III.
	4) 78906	5) 34567	6) 29702
Quotient	19726 (2)	6913 (2)	4950 (2)
	4	5	6
Proof	78906	34567	29702

In the first of these Examples I say, the 4's in 7, once, and there remains 3, which makes 8, the next Figure in the Dividend 38; then the 4's in 38, 9 times; 9 times 4 is 36, from 38, and there remains 2; which makes 9 the next Figure in the Dividend, 29; then the 4's in 29, 7 times; 7 times 4 is 28, from 29, and there rests 1, which makes 0 the next of the Dividend, 10, and the 4's in 10 twice; twice 4 is 8, from 10, and there remains 2; which makes 6 the last of the Dividend, 26; lastly, the 4's in 26, 6 times; and 6 times 4 is 24, from 26, and there rests 2 the Remainder; and so for the other two Examples. And for Proof of the Work, (or of any other Example) multiply the Quotient by the Divisor, and take in the Remainder in the first Place, or Place of Units; and if the Product be the same with the Dividend, the Division is right; for I say, 4 times 6 is 24, and 2 the Remainder makes 26; 6 and go 2, &c.

More Examples by a single Figure.

	3) 54321	7) 279060	9) 234567
Quotient	18107 (0)	39865 (5)	26063 (0)
Proof	54321	279060	234567

This is the shortest Way of Division that can be by a single Figure.

As it is necessary for Expedition to multiply by 11 and 12 as by a single Figure, to have the Product in one Line; so divide as in these Examples, *viz.*

11) 72646206	12) 76677240
Quotient 6604200 (6)	6389770
11	12
Proof 72646206	76677240
11) 47627000	12) 42007400
Quotient 4329727 (3)	3500616 (8)
11	12
Proof 47627000	42007400

In the first of these Examples, I say, the 11's in 72, answer 6 times, &c. In the second, I say, the 12's in 76, answer 6 times, &c. In the third, I say, the 11's in 47, 4 times, 4 times 11 is 44, from 47, and there rests 3, &c. In the fourth, I say, the 12's in 42, 3 times; 3 times 12 is 36, from 42, and there remains 6, &c.

By being ready and dextrous in the Examples above, you may expeditiously divide by these Numbers, *viz.* 110, 120, 1100, or 1200, &c. for it is but cutting off, or separating the Cyphers from 11 and 12, (when these Numbers happen to be Divisors) and cutting off and separating the like Numbers of Figures or Cyphers from the Right-hand of the Dividend, and then divide the other Figures or Cyphers towards the Left-hand, by 11 or 12, as it shall happen; as in the Examples following, *viz.*

Divide 34567 by 110, and 890123 by 120, and 98765 by 1100, and 678901 by 1200.

11,0) 3456,7	12|0) 89012|3
Quotient $314\frac{2}{11}$ or $\frac{27}{110}$	$7417\frac{8}{12}$ or $\frac{83}{120}$
11,00) 987,65	12|00) 6789|01
Quotient $89\frac{8}{11}$ or $\frac{855}{1100}$	$565\frac{9}{12}$ or $\frac{901}{1200}$

When you divide by 10, 100, 1000, or 10000, &c. you have nothing more to do than to cut off, or to separate so many Figures or Cyphers of the Dividend, towards the Right Hand, as you have Cyphers in the Divisor, and those Figures

E 3   towards

towards the Left make your Quotient; and those cut off towards the Right, is the Remainder.

Examples.

Divide 123456789 by 10, 100, or 1000, 10000.
By 10 the Quotient is 12345678, and the Remainder 9.
By 100 the Quotient is 1234567, and Remainder 89.
By 1000 the Quotient is 123456, and Remainder 789.
By 10000 the Quotient is 12345, and Remainder 6789.

When the Divisor consisteth of several Figures, then there ariseth a little more Difficulty, in the Work, but if the following Directions are heedfully attended to, the seeming Difficulty is easily overcome; as in the succeeding Examples, *viz.*

Suppose I am to divide 78901 Pounds among 32 Parishes, or suppose an Affessment of so much Money was laid on so many Parishes; what must each Parish pay by an equal Proportion towards the raising such a Supply?

Divisor 32) 78901 (···· Quotient.

The Example thus set out, I begin at the Left-hand, seeking how often I can take 32 out of 78; or more easy, how many times 3 is in 7, and the Answer is two times; which I place in the Quotient thus 32) 78901 (2, and then according to the *General Rule of Working*, I multiply the Divisor 32, by the two placed in the Quotient, saying, twice 2 is 4, and twice 3 is 6; so there is 64 to be taken out of 78, and stands thus:

$$32) 78901 (2.$$
$$\underline{64.}$$
$$14$$

Then I make a Point under 9, the third Figure of the Dividend, and bring it down to the Remainder 14, and then the Work appears thus:

$$32) 78901 (24$$
$$\underline{64.}$$
$$149$$

Then I seek again, asking how many times 32 in 149? which is not readily to be answered; but how many times 3, the first Figure of the Divisor, is there in 14, the two first Figures of the Dividual 149, and the Answer is 4 times; wherefore, after placing 4 in the Quotient, I multiply, (as directed in the *General Rule*) the Divisor 32 by the said 4, saying, 4 times 2 is 8, placing it under 9 in the Dividual:

then

then 4 times 3 is 12, and set down under 14; so there is 128 to be taken out of 149, and then the Work appears thus:

```
32) 78901 (24
    64··
    ────
    149
    128
    ────
    210
```

And after Subtraction there remains 21; then I make a Point under o in the Dividend, and bring it down to the Right of the Remainder 21; and then there is 210 for a new Dividual; then as the general Rule directs, I seek again, saying, how many times 32, the Divisor, is there in 210, the Dividual? or easier, how many times 3 in 21? ☞ For observe well, That when ever you have a Place more in the Dividual than in the Divisor, then always seek how oft you can take the first Figure of the Divisor out of the two first of the Dividual) and the Answer is 7 times; but it will not bear 7 times, for 7 times 32 is 224, and you cannot take 224 out of 210; or rather you cannot take 22 out of 21; wherefore try in your Mind before you set down the Answer, or Figure in the Quotient, whether it will go to the Number of Times as is most easily suggested as here the Question or Demand is readily answered 7 times; and so many times 3 may be taken in 21; but when you come to multiply the whole Divisor by the times you place in the Quotient, you begin at the Right-hand, and go towards the Left, carrying the Tens that arise to the next Place, which increases the Product so, that sometimes Subtraction cannot be made, because the under Line is greater than the upper, or that which you should subtract from; wherefore first try in your Mind as aforesaid; and since it will not bear 7 times, try if it will go 6 times; saying, 6 times 2 is 12, 2 and carry 1, and 6 times 3 is 18, and 1 is 19; and 19 may be taken out of 21, therefore set down 6 in the Quotient next to the 4, and multiply the Divisor 32 by it, and the Work will stand thus:

```
32) 78901 (246
    64···
    ────
    149
    128
    ────·
    210
    192
    ────
    181
```

Here the Divisor 32 multiplied by 6, gives 192 to be taken out of 210, and the Remainder is 18; to which, after a Point made under it, I bring down the 1, the last Figure of the Dividend, and then there is 181 for a new Dividual; then according to the Rule, I seek again (for you are to note, That the aforesaid *General Rule for working* must be as often repeated as you bring down a

Figure

Figure or Cypher from the Dividend, to make a new Dividual; and also, that for every Figure or Cypher brought down, there must likewise be a Figure or Cypher placed in the Quotient, how many times 32 the Divisor may be taken out of 181 the Dividual; or how many times 3 in 18, and the ready Answer is 6 times, but on the Trial I find it will not go 6 times, wherefore I try a time

less by 1, *viz.* 5 times and find it will bear it; and setting 5 in the Quotient next to the 6, I multiply the Divisor 32 by it; and it produces 160; which subtracted from 181, the last Remainder is 21, and the Quotient or Answer is 2465; and shews that 32 is contained in 78901, 2465 times and 21 over, as *per.* Work.

$$32) 78901 (2465$$
$$64 \cdots$$
$$\overline{149}$$
$$128$$
$$\overline{210}$$
$$192$$
$$\overline{181}$$
$$160$$
$$\overline{(21)}$$

Again, admit a Nobleman hath 30,000 *l.* per *Annum*, what is his daily Income?

If you divide 30000 by 365 (the Days in a Year) the Quotient will be the Answer. Set it down for working thus.
$$365) 30000 (\bullet$$

First, seek how many times 365 can be taken in 300, (an equal Number of Places with the Divisor) answer 0 times; wherefore I go a Place farther to the Right-hand in the Dividend (for 0 must never begin the Quotient, as was said before) and make a Point under it, *viz.* under the last 0 but one, as may be seen in the Example; and there being a Place more in this pointed out Dividual than in the Divisor, I seek how oft the first Figure of the Divisor. *viz.* 3, is contained in the two first Figures or Places of the Dividend, *viz.* 30, and the Answer is 10 Times; but you are never to take above 9 times at once, in any of these Examples of Division, wherefore try in your Mind whether it will bear 9 times, before you set it down in the Quotient (as was said before) saying to yourself, or in your Mind, 9 times 5 is 45; 5 and go 4; 9 times 6 is 54, and 4 is 58; 8 and go 5; and 9 times 3 is 27, and 5 is 32; now 32 cannot be taken out of 30, wherefore take a time less by a Unit or One, viz.
8 times

8 times; and finding it will not go 8 times, set down 8 in the Quotient; and then say, 8 times 5 is 40, 0 and carry 4; and 8 times 6 is 48, and 4 is 52; 2 and carry 5; and 8 times 3 is 24, and 5 is 29; and then there is 2920 to be taken from 3000; and after Subtraction the Work appears thus.

$$365) \ 3000 \ (8$$
$$2920$$
$$\overline{80}$$

Then to the Remainder 80, I bring down 0, the last of the Dividend, and then there is 800 for a new Dividual; then you must try how oft you can take 365 out of the said Dividual 800, and the Number of Places being equal to both in Divisor and Dividual, to wit, 3, ask how oft three in 8; answer twice; so put 2 in the Quotient, and say twice 5 is 10; 0 and carry 1; and twice 6 is 12, and 1 is 13; 3 and carry 1; and twice 3 is 6, and 1 is 7; so there is 730 to be deducted from 800, and the Remainder is 70, as in the whole Work may be seen, viz.

$$365) \ 30000 \ (82$$
$$2920 \cdot$$
$$\overline{800}$$
$$730$$
$$\overline{(70)}$$

Thus by the Work the Nobleman hath Eighty-two Pounds *per Diem*, and 70 Pounds over; which if multiplied by 20, the Shillings in a Pound, would produce 1400 Shillings; which if divided *per* said Divisor 365, there would come out 3s. a Day more, and there will be a Remainder of 305, which multiplied by 12, the Pence in a Shilling, produces 3660; which divided still *per* 365, gives 10 Pence a Day more: So that 30000 *l.* a Year, is *l.*82---3---10 a Day.

Once more; Divide 46242 Gallons of Canary, by 252, the Gallons in a Tun, thus set down:

$$252) \ 46242 \ (183$$
$$252 \cdot \cdot$$
$$\overline{2104} \cdot$$
$$2016$$
$$\overline{882}$$
$$756$$
$$\overline{(126)}$$

In this Example, after Enquiry, I find that it will not go twice; therefore I set down 1 in the Quotient, and place 352 under 462 of the Dividend, and after Subtraction the Remainder is 210; to which I bring down 4 from the Dividend, and the Dividual is 2104; and then seeking again, find it will bear 8 times; which placed in the Quotient, and the Divisor 252 multiplied by

it

it, the Product is 2016 to be ſubſtracted from 2104, which being done, the Remainder is 88; to which 2, the laſt Figure of the Dividend being brought down, there is 882 for the laſt Dividual; and then ſeeking again, I find it will go 3 times; and the Product of the Diviſor multiplied by 3, is 756; which ſubſtracted from 882, there remains 126 for the laſt, or true Remainder: So that by this Diviſion I find there are 183 Tuns in 46242 Gallons, and 126 Gallons remaining, or over and above; which being Half of 252 the Diviſor; the Remainder is therefore Half a Tun more.

When you have a Cypher or Cyphers in the Diviſor, in the Firſt, Second, or Third Place, &c. ſeparate ſuch Cypher or Cyphers with a Daſh of the Pen, from the reſt of the Diviſor; and alſo cut off as many Figures or Cyphers from the Right of the Dividend, as you cut off Cyphers from the Diviſor, and divide the remaining Figures towards the Left-hand by the remaining ſignificant Figures of the Diviſor.

Example.

Divide 42952 Square Poles of Land by 160, the Square Poles in an Acre of Land.

16|0) 4295|2 (268
  32 · · ·
———
  109
   96
———
  135
  128
———
  (7)

Here the Cypher is cut off from the Diviſor, and 2 from the Dividend; then I aſk how oft 16 in 42; anſwer twice; then the 16's in 109, anſwer 9 times; then 16's in 135, anſwer 8 times. So there are 268 Acres, and 7 remains, that is in 268 Acres, $\frac{7}{16}$ or $\frac{7}{160}$ or almoſt Half an Acre.

Divide 27|00)62746|20(2323 $\frac{25}{27}$ or $\frac{2500}{2700}$
  54 · · ·
———
  87
  81
———
  64
  54
———
  106
   81
———
  (25)

In this Example, two Cyphers are ſeparated from the Diviſor, and alſo two Places from the Dividend, and then 62746 is divided only by 27. See the Work.

When

When the Divisor is 3, 4, 5, 6, or more Figures, there is a sure and easy Way of performing the Work truly, by making a Table of the Divisor : which may be done by *Addition*, or by multiplying the Divisor by 2, 3, 4, &c. Admit you are to divide 987654321 by 123456.

123456)987654321 (8000	Times	123456
987648 · · · 8	1	123456
	2	246912
(6321)	3	370368
Here having noted the Number of Figures in the Divisor, which here is 6, I make a Point under the Sixth Figure, or Place of the Dividend, &c.	4	493824
	5	617280
	6	740736
	7	864192
	8	987648
	9	1111104

The foregoing Table is made by doubling the first Line, which makes 246912 ; which added to the first or uppermost Line, gives the 3d Line 370368, which also added to the said first Line, makes 493824 for the 4th Line or Product ; and so of the rest ; still remembering to add the subsequent Line or Product to the first or uppermost Line, till you come to the last Line of 9 times, which is 1111104; the Truth of which may be proved by multiplying the first or uppermost Line by 2, 3, 4, 5, &c. and if you commit an Error by *Addition*, it may be found or corrected by *Multiplication*.

The Use of the said Table.

When you have pointed out your Number of Places in the Dividend, cast your Eye on the Table, and at the first View you may know how many times you can take, as in this Example, 7 times is too little, and 9 times too much ; wherefore I set down 8 in the Quotient, and then multiply and subtract, and the Remainder is 6 ; to which I bring down 3, and put 0 in the Quotient, then to the 63, I bring down

down 2, and place o in the Quotient; then to 632 I bring
down 1, the last Figure of the Dividend: But still it will
not bear any Times or Time, wherefore I put another o in
the Quotient; and so the Work is done, and the Quotient
is 8000, and the Remainder 6321, as in the Work.

Thus having plainly, fully, and pertinently shewn, by
verbal Directions, the Method of working Division; I think
it unnecessary to give any more Examples in that Manner,
but shall leave some few Examples for Practice Sake, whose
Quotients and Remainders are expressed, but the Operation
omitted, to save Room, and for Trial of the Ingenuity of
Practitioners.

7400690042 divided by 987, the Quotient is 7498166,
    and the Remainder 200.

479679002742 divided by 4689, the Quotient is 102298704
    and the Remainder 4566.

7969767002 divided by 976294, the Quotient is 8163,
    and the Remainder 279080.

45678901234 5, divided by 9876543, the Quotient is
    46249, and the Remainder 8775138.

764697 by 4500 Quotes 16993, and Remainder 1249. And
8092320000 by 345000, quotes 23456, and remains (0)

The Proof of Multiplication and Division.

THese two Rules reciprocally prove each other; for in
    proving *Multiplication,* if you divide the Product by
the Multiplier, the Quotient will be like the Multiplicand;
or if the Multiplicand, the Quotient will be the same with
the Multiplier.

Exa. 1.   345
              24
          ─────
         1380
          690
       ─────
    24) 8280 (345
        72··
       ─────
        108
         96
       ─────
        120·
        120
       ─────

Exa. 2.
    Or thus,
345) 8280 (24
      690
    ─────
     1380
     1380
    ─────
     (0)

To

To prove Division.

Division may be proved by Division thus:
If you divide the Dividend by the Quotient, the Quotient will be your former Divisor.

Example.

Divide 8280 by 345.

345) 8280 (24

Here the Working again is needless, it being in the Page foregoing; and shews the Truth of the Assertion, that *Division* may be proved by *Division*, as aforesaid.

But the most usual Way of proving *Division*, is by *Multiplication* in this Manner, viz. multiply the Quotient by the Divisor, and the Product will be equal to the Dividend, Example of 1, in the foregoing Page.

345 *Quotient*.
24 *Divisor*.

1380
690

8280 *Proof*.

Note, That when there is any Remainder, such Remainder must be taken in or added to the Product.

As in *Multiplication*, I gave some Examples of its Utility in Money, so likewise I shall give a few Examples of *Division of Money*; whereby may be seen how expeditiously some Things may be done, without having Recourse to Reduction, the Rule of Three, &c. viz.

Example 1.

Divide 26 l. 12 s. 6 d. equally among Five Men. For Disposition of working, set it down as follows.

```
   l.  s.  d.
5) 26—12--6

   5—06—6
        5

Proof. 26--12-6
```

In the Working of this, I say, the 5's in 26, 5 times; 5 times 5 is 25, from 26, and there remains 1, or 1 Pound, or 20 Shillings; which with the 12s. in the Place of Shillings, makes 32s. then the 5's in 32, 6 times; 6 times 5 is 30, from 32, and there remains 2s. or 24d. which with the 6d. in the Place of Pence, makes 30; then the 5's in 30, 6 times; and so the Work is done, and the Answer is that each Man must have

have *l.* 5---06---6 for his equal Share in the said Division of
l. 26---12---6 amongst 5 Persons; and the Truth of it is
proved by Multiplication of Money, sufficiently shewn in
the Rule of Multiplication; as here, 5 times 6 is 30; 6 and
carry 2; and 5 times 6 is 30, and 2 is 32; 12 and carry
1; and 5 times 5 is 25, and 1 is 26, &c.

Example 2.

Divide the Charges of a Country Feast, amounting to
l. 246---13---4 equally among 12 Stewards, to know what
each Steward must pay.

```
        l.    s.   d.
 12)  246 — 13 — 4
 ────────────────
 Answer 20 — 11 — 1 4/12
```

Here I say the 12's in 24
twice, and the 12's in 6, 0
times, and there remains 6*l.*
or 120*s.* and 13*s.* make 133;
and then 12's in 13 once, and there remains 1*s.* or 12*d.* then
12 and 4 is 16; and the 12's in 16 once, and 4 remains; so
that each Steward must pay *l.* 20--11--1 4/12 or four Twelfths
of a Penny, something more than a Farthing; and this may
be proved as that above.

When any Quantity is such a Number that any two Di-
gits of the *Multiplication-Table*, multiplied together, make
the said Quantity or Number, then the Quotient may be
very expeditiously found at two Divisions, and sooner than
at one. *Example*: Divide 7872 by 32. In this Example
the Digits, component Parts, or Ratio's, which multiply'd
together, make the Divisor 32, and 4 and 8, or 8 and 4;
for it matters not which of the Ratio's you divide by first;
for either of which Divisions give a true, and the same
Quotient; as may be seen by the different Methods of the
following Work.

```
 4) 7872          Or thus, 8) 7872
 ─────            ──────────
 8) 1968             4) 984
 ─────            ──────────
   246 Quotient.      246 Quotient.
```

Here though the Operations are divers, yet the *Quotients*
are one and the same. Again, divide 44184 by 56.

Example 2.

$$7) \; 44184$$
$$8) \; 6312$$
$$789 \; Quotient.$$

Here the *Divisors* are 7 and 8, or 8 and 7 ; for either, or both, will give the same *Quotient.*

And thus may above Forty Examples be wrought by Numbers out of the *Multiplication Table*, with great Dispatch and Expedition, as by 15, 18, 25, 35, 64, 72, 96, &c.

When it happens there is any Remainder in the first Division, or the last, or in both ; to know the true Remainder as if you divided by the common Way, take this Method, *viz.* multiply the first Divisor by the last Remainder, and to take in or add the first Remainder, if there be any, and the Product will be the true or same Remainder as if you divided by the long Way. *Example* : Divide 4567, by 15.

$$3) \; 4567$$
$$5) \; 1522 - 1$$
$$304 - 2$$
$$(7)$$

Here I multiply 3, the first Divisor, by 2, the last Remainder, and take in 1, the first Remainder, and it makes 7 for the true Remainder, as may be proved at Leisure, by the other Way.

The same Observation and Method must be taken with respect to component Parts mentioned before, in Division of Money, as in Division of simple Numbers.

Example.

	l.	*s.*	*d.*
Divide 3)	463	18	06 into 18 equal Parts.
(6)	154	12	10
Answer	25	15	$5\frac{4}{6}$

By this Method of *Division of Money* (if the Quantity be as aforesaid made by even component Parts) you may, by having the Price of several Things, know the Price or Value

lue of one Thing, at the ſaid Rate, as well as by the *Rule of Three*: So doth *Multiplication of Money* anſwer Queſtions in the *Rule of Three*, when the firſt Number is a Unit or One.

Example by Diviſion.

7) *l.   s.   d.*

If 84*lb.* of Coffee coſt 31—10—o what is that a *lb?*

12) 4—10—o

Anſwer   o—07—6 a Pound.

As in the Multiplication of Money, to have an Anſwer, you multiply the Price by the Quantity, ſo in Diviſion of Money, you divide the Price by the Quantity, to have your Anſwer.

I could ſpeak more largely, if I had Room, of the excellent Uſes that may be made of *Multiplication* and *Diviſion* only; but their various Uſes will be better underſtood by their Application in the following Rules of *Arithmetick*, particularly in the next Rule, call'd,

REDUCTION.

WHICH is an Application of *Multiplication* and *Diviſion*, ſhewing how to reduce Numbers of one Denomination to another, thereby diſcovering the ſame Value, tho' in different Terms.

1. As firſt, All Great Names are brought into Smaller by Multiplication, as Pounds into Shillings, Pence, or Farthings, by multiplying 20, 12, and 4. Or Hundreds Weight into Pounds Weight, by multiplying by 4 and by 28, or by 112; or lower, into Ounces or Drams, by multiplying by 16 and 16.

2. And on the contrary. All ſmall Names are brought into greater by Diviſion; as Farthings into Pounds, by dividing by 4, 12, and 20; and Pounds Weight into Hundreds Weight, by dividing by 28 and 4; and Drams into Pounds, by dividing by 16 and 16.

But you may Note, That Pounds only are brought into Pence, by multiplying by 240; or into Farthings by multiplying by 960; and juſt the contrary by Diviſion.

And for Weight, as expreſſed above.

The

The Senfe, Meaning and Ufe of *Reduction*, is expreffed in the following Verfes.

Reduction *ſhews how we of Names in Ufe,*
May Great to Small, and Small to Great, reduce ;
So that the Anſwer which ſhall thence ariſe,
The given Sum in Value equalize ;
Multiply, or divide it, back you muſt ;
Which makes again your given Number juſt.

Example 1.

In 240 *l.* Sterling how many Pence ?
20 Shillings 1 Pound.

		Or *thus.*
	4800 Shilings in 240 *l.*	· 240 *l.*
	12 Pence 1 Shilling	240 *d.* in a *l.*
Anſwer	57600 Pence in 240 *l.*	9600
		480
		Anſwer 57600

Example 2.

In 226 Tuns of Copper, how many Pounds Wt ?
20 C. 1 Tun.

	Or *thus,*
4520 Hund. Wt. in 226 Tuns	226 Tuns
4 qrs. 1 C.	20
18080 qrs. of a C. Wt. in 226 Tuns	4520
28 lb. 1 qr. of a C.	112
144640	54240
36160	4520
506240 Pounds Wt. in 226 Tuns	506240 Pounds

Thefe foregoing Examples are great Names to be brought into Small (as may eafily be obferved and underftood;) therefore, as the firft Rule directeth, it is done by Multiplication, by multiplying the greater Name by the Number of the next leſſer Name that makes one of the faid greater ; as in the laſt Examples the leſſer Name to Pounds is Shillings ; where-

wherefore I multiply by 20, becaufe 20 of that leffer Name makes one of the faid greater Name, *i.e.* 20 Shillings make a Pound. And the fame Regard is had, and Method ob-ferved in the Example of Weight; as is very plain to be feen in the Work, and is called *Reduction Defcending*, becaufe it brings Higher or Greater Denominations into Lower or Leffer.

4)   *Example 3.*

Bring 494400 Farthings into Pounds.

	Or thus:
12) 123600 Pence.	96|0) 49440|0 (515 *l.*
	480 ··
2|0) 1030|0 Shillings.	——— In this Way
	144 I divide by
515 Pounds.	96 960, the
	——— Farthings
	480 in a Pound,
	480 &c.
	———
	(0)

In the firft Way I divide the Farthings by 4, becaufe 4 of them make a Penny, and the Quotient is Pence; then thefe Pence I divide by 12, becaufe 12 of them make a Shilling, and that Quotient is Shillings; which Shillings I divide by 20, to bring it into Pounds, thus; I cut off the Cypher in the Dividend towards the Right, for the Cypher that is in the Divifor 20, which is alfo feparated from 2 with a Dafh of the Pen, (as may be feen in the Work) then I halve the Figures one by one, as they are united with the Remainder in the Dividend; which Half is Pounds, and is a fhort Way of Dividing by 20; in the Example I fay, the Half of 10 (becaufe I muft not fet down 0 at the Beginning) is 5, and the Half of 3 is 1, and there remains 1; which makes the next, which is 0, 10; and the half of 10 is 5. So that 10300 Shillings makes 515 Pounds, or there are fo many Pounds in 494400 Farthings.

Note, In dividing by 20, as above, if any Thing re-mains it muft be joined or annexed to the Figure or Cypher cut off; as fuppofe there had in halving the laft Figure ex-cepting that you cut off, remained 1, which there doth ne-ver more, and then neither, but when the Figure halveth odd;

odd; I say, if there had remained 1, then it must have been joined to the Cypher separated or cut off, and then there would have been 10 Shillings.

Example 4.

Reduce 27552 Pounds Weight into Hundreds Wt.

```
        4)
28) 27552 (984                      Or thus :
     252 · ·   ———                  lb.
     ———— 246 C. wt. Answer.   112) 27552(246 Ans.
     235      ———                    224 · ·
     224                             ———
     ———                            515
    1·12                            448
    112                            ———
    ———                             672
    (0)                             672
                                    ———
```

In the first of the two foregoing Examples, I divide the Pounds by 28, to bring them into Quarters; then I divide those Quarters by 4, to bring them into Hundreds Weight, as in the Work.

In the second Way, I divide the Pounds Weight by 112, the Pounds in a C. Weight, and it brings the Pounds Weight into Hundreds Weight at once.

The said Examples are of small Denominations to be brought into greater; and therefore according to the second Rule of Direction, it is done by Division, by dividing the lesser Name by as many of them as make the next greater Name; that is, by 28, because 28 of them make one of the next greater Name, *viz.* a Quarter of a Hundred; and this Reduction is called *Reduction Ascending*, because it brings low or small Names to higher or greater Denominations.——By which may be observed, that all Questions in Reduction whether Ascending or Descending, are answered either by Multiplication or Division, or by both; as will plainly appear in the sundry Examples of reducing of divers Denominations to others.

When it is required to reduce Numbers of several Denominations by *Reduction Descending*, or by *Multiplication*, you are to work as before; but you must always remember to take in such Numbers as stand in the Place of the next in-
ferior

ferior Denomination ; as when you multiply the Pounds by 20, if there be any Shillings in the Denomination or Place of Shillings, you must take them in. So likewise when you multiply the Shillings by 12, if there be any Pence in the Place of Pence, you must also take them in. And so when you multiply the Pence by 4, to bring them into Farthings, you must take in the Farthings, if there be any, in the Place of Farthings, as in the following Work.

Example 5.

```
       l.    s.    d.
In 346—16—9½ how many Farthings ?
    20 Shillings 1 Pound.
    ——
    6936 Shillings in 346 l. 16 s.
      12 Pence 1 Shilling.
    ——
    83241 Pence in 346 l. 16 s. 9 d.
        4 Farthings 1 Penny.
    ——
  332966 Farthings in 346 l. 16 s. 9 d. ½.
```

The Example is so plain in the Work that it hardly needs any Explanation ; but I begin to say, o is o, but 6 in the Units of Shillings is 6 ; then twice 6 is 12 ; and 1, in the Tens of Shillings is 13 ; 3 and carry 1 ; and twice 4 is 8, and 1 is 9 ; twice 3 is 6 ; then by 12, saying 12 times 6 is 72, and 9 d. (in the Place of Pence) is 81 ; 1 and carry 8 ; and 12 times 3 is 36, and 8 is 44 ; 4 and carry 4 ; and 12 times 9 is 108, and 4 is 112 ; 2 and carry 11 ; and 12 times 6 is 72, and 11 is 83, &c.

Example 6.

```
      C.   qrs.   lb.
In 56—2—16 of Tobacco, how many Pound Weight?
    4—qrs. 1 C.
    ——
    226 qrs. in 56 C. 2 qrs.
     28 lb. 1 qr. of a C.
    ——
    1814
    453
```

Ans. 6344 Pounds Weight in 56 C. 2 qrs. 16 lb.

In the foregoing Work, I firſt multiply the 56 C. by 4 and take in the two Quarters; and then I multiply the 226 qrs. by 28, ſaying 8 times 6 is 48, and 6 (the Unite Figure in the odd Pounds) is 54; 4 and carry 5, &c. Then I multiply by 2, ſaying twice 6 is 12, and 1 (that ſtands in the Place of Tens in the odd Pounds) is 13; 3 and carry 1, &c. Then adding the two Products together, they make 6344 Pounds, contained in 56 C. 2 qrs. 16 lb. as in the Work is conſpicuous, or the Example may be ſooner done by multiplying the 56 C. by 112, the Pounds in a C. Wt. and taking in the odd Weight, viz. 2 qrs. 16 lb. or 72 Pounds at once, thus:

```
     C.
    ·56·           I ſay here, 12 times 6 is 72 : 2
    112            and carry 7; and 12 times 5 is
    ———           60, and 7 is 67; then once 6 is
    672            6, ſetting it down in the third
 56,72 odd Weight. Place, becauſe by multiplying by
    ———           12 at once, two Places are taken
   6344            up; See the Work.
    ———
```

Or ſtill briefer thus, by ſetting down the 56 C. four ſeveral Times in following Manner; taking in the odd Weight, as before.

```
        56 C.
         56
         56
        56,72
```

The ſame as above, viz. 6344 Pounds.

Reduction Aſcending,

Is the bringing Numbers from a leſſer Denomination to a greater, and is the Reverſe of *Reduction Deſcending*; and each may ſerve as a Proof to the other, one being performed by *Multiplication*, and the other by *Diviſion*.

And Note, That when at any Time in *Reduction Deſcending* you take in, or add to, the odd Money, Weight, or Meaſure, as you multiply the ſeveral Denominations, ſuch Quantities will be Remainders in *Reduction Aſcending*.

Example.

Example by the two foregoing Sums.

4)

In 332966 Farthings, how many Pounds ?

12) 83241—½d. remains what taken in.

2,0) 693,6—9d. remains what taken in.

346——16s. remains what taken in.

So that in 332966 Farthings, there are 346l. 16s. 9d. ½, and is a ſure Proof of the foregoing Work deſcending.

Again, in 6344 Pounds Weight, how many Hundreds Weight ?

```
            4)
28) 6344 (226) qrs.
   56··    ———
   ‾‾      56 C. 2 qrs. taken in.
   74
   56
  ‾‾‾
  184
  168
  ‾‾‾
 (16) remain Pounds taken in.
```

So that in 6344 Pounds Weight there is 56 C. 2 qrs. 16lb. and proves the foregoing Example deſcending to be right.

Now follow promiſcuous Examples of both Kinds of Reduction, one proving the other.

In 276l. 12s. how many Pence ?

```
  20
 ————
 5532
  12
```

Anſ. 66384d.

In 66384d. how many Pounds ?

```
2|0) 553|2
```

Anſ. l. 276|12 and *Proof.*

In 47964 Grains how many Pounds *Troy*?

```
            20)
24) 47964  (199|8
   24··· 12) 99—18 Pwts.
  ‾‾‾
  239
  216
 ‾‾‾‾
  236
  216
 ‾‾‾‾
  204
  192
 ‾‾‾‾
 Gr. (12)
```

In 8 lb. 3 oz. 18 pwt. 12 gr. *Anſwer.* how many Grains.

```
  12
 ————
  99
  20
 ————
 1998
  24
 ————
 7994
 3997
 ——————
 47964 and Proof.
```

Anſwer.

In

In 34 C. ¾ of Cotton Wool, how many Pounds?

```
    34              ·112) 3892 (34 C. ¾ Proof.
    34               336·
  34|84
                      532
3892 Pounds.          448

                  (84) lb. or ¾ of C.
```

In 456 C. 3 qrs. 27 lb. of Copper, how many Pounds? And what comes it to, at 21 d. per lb.

```
      456 C.
      456              Or thus,
      456              C.
      456
      ,111             456
                       112
51183 Pounds.
    21                 5472
                       456
51183                  , 111
102366
                   51183 Pounds.
```

1074843 Pence; which bring into Pounds by *Division*, ——— or *Reduction Ascending*, as before shewn, and it will amount to *l.* 4478 : 10 : 3.

Bring 4796 Ells *Flemish* into Ells *English*; multiply by 3, 3 and divide by 5, because 3 Quarters make an ——— Ell *Flemish*, and 5 an Ell *English*.

5) 14388

2877⅗

Reduce 456 Ells *English* into Yards; multiply by 5, and divide by 4, thus:

```
      456 English Ells.
      5 qrs. 1 Eng. Ell. In 570 Yds. how many Eng. Ells?
                       4 qrs. 1 Yd.
4) 2280 qrs.
                       5) 2280
Yds. 570 Ans.
                   English Ells 456 Answer and Proof.
```

Bring

Bring 130 Tuns of Wine into Gallons.
     4 Hogſheads 1 Tun.

	Or thus.
520	252 Gallons 1 Tun.
63 Gallons 1 Hogſhead.	130 Tuns.
1560	7560
3120	252
Anſ. 32760 Gallons.	32760

And ſo the contrary by *Diviſion.*

      Laſts.   Quarters·   Buſhels.   Pecks.

Reduce 42 ———— 3 ———— 5 ——— 2 into Pecks.
     10 qrs. 1 Laſt.

     423 qrs.
     8 Buſhels 1 qr.

     3389
     4 Pecks 1 Buſhel.

Here I multiply by 10, and take in 3 *qrs.* and then by 8, and take in 5 *Buſhels*; and laſtly by 4, and take in 2 *Pecks.*

     13558 Pecks in 42 Laſts, 3 Quarters, 5 Buſhels, and 2 Pecks.

        4)
In   13558 Pecks, how many Laſts, &c.

8) 3389 2 Pecks taken in.

1|0)42|3 5 Buſhels taken in.

Laſts 42 3 Quarters taken in.

Anſwer, 42 Laſts, 3 Quarters, 5 Buſhels and 2 Pecks.

Thus by the two foregoing Examples it is ſeen, that *Reduction Aſcending* and *Deſcending* mutually prove each other, as was ſaid before; and is no more than that *Multiplication* and *Diviſion* prove one another.

By *Reduction* alſo,

Foreign Coins of Exchanges may be reduced to Sterling Money; and on the contrary, Sterling Money to Foreign.

Example.

Reduce 246 *Venetian Ducats de Banco*, into Sterling Money, the Exchange at 52*d.* Sterling *per* Ducat, thus :

$$
\begin{array}{r}
246 \\
52 \\
\hline
492 \\
1230 \\
\hline
\end{array}
$$

12) 12792

2|0) 106|6

l. 53,6 To be paid in *London*, for the 246 Ducats drawn in *Venice*.

Reduce 53*l.* 6*s.* Sterl. into Ducats at 52*d.* Sterl. *per* Duc.

$$
\begin{array}{r}
20 \\
\hline
1066 \\
12 \\
\end{array}
$$

52) 12792 (246 Ducats to be paid in *Venice* for the 53*l.* 6*s.*
104   drawn in *London,*

23, &c.

To reduce *Flemish* Money into *Sterling* Money, divide, the Pence *Flemish* by the Par of Exchange, *viz.* 33*s.* 4*d.* and the Quotient will be the *Sterling* Money ; and what remains, multiply by 20, &c.   *Example.*

In 242*l.* 13*s.* 4*d. Flemish*, how many
20   Pounds *Sterling*, &c.

33*s.* 4*d. Flemish.*   4853
12   12
———   ———
400   400) 58240

l. 145 *Sterling.*

Remains   240
20
———
4|00)48|00
12 Shillings *Sterling.*

F

By the Work it appears that 145 *l.* 12*s.* Sterling, answers, or is equivalent to 242 *l.* 13*s.* 4*d.* *Flemish*, at 33*s.* 4*d.* *Flemish, per* Pound Sterling.

Thus *Flemish* Money may be reduced to *Sterling* Money, though the Par of Exchange be at any other Rate of Shillings and Pence *Flemish* ; but when at the Rate, as above, *viz.* 33 *s.* 4 *d.* (the common Par) then the Answer is sooner found by multiplying by 3, and dividing by 5 ; for 400 *d.* *Flemish* is the same to 240 *d.* Sterling (each being a Pound) as 3 is to 5 ; for if you divide 240 by 3, it quotes 80 : So 400 divided by 5, quotes the same.

The foregoing *Example* done by the last proposed Way.

l. 242—13—4 *Flemish.*
                    3
——————————————
5)728—00—0
——————————————
l. 144—12—0 *Sterling.*

Note, French Money is reduced to *Sterling, viz. Livres, Sols,* and *Deniers* (or *French* Pence) as *Sterling* and *Flemish* Money is by multiplying by 20 and by 12. Also *Proclamation Money* is reduced to *Sterling,* if you multiply by 3, and divide by 4.

In 436 *French* Crowns, each 54*d.* $\frac{1}{4}$ Sterling, how many Pounds, &c. Sterling ?

426
54
————
1704
2130
106$\frac{2}{4}$ or $\frac{1}{2}$ *d.*
————
12) 23110 : 10*d.*
————
2|0) 192|5
————
Answer *l.* 96 : 5 : 10 Ster.

In this Example the Number of Crowns is multiplied by 54*d.* and for that I take the 4th Part of 246, which is 106$\frac{2}{4}$ of a Penny, or a Half penny ; which added to the other Pence, gives for Total 23110*d.* which divided by 12, quotes 1925, and 10 *d.* remains ; so the Answer is 96*l.* 5*s.* 10*d.* $\frac{1}{2}$ Sterling ; as in the Work.

Again, bring 1600 Pieces of Eight *Mexico,* at 54*d.* $\frac{2}{8}$ Sterling, into Pounds, &c. Sterling ?

1600

```
 1600
   54
```

```
 6400
 8000
  200
  200
```

12) 86800 Pence.

2|0)723|3—4.

l. 361 : 13 : 4

Here the 1600 Pieces of Eight are multiplied by 54, to bring them into Pence; and for the $\frac{2}{8}$ I take $\frac{1}{8}$ of 1600 twice, &c. as in the Work. And the Answer is *l.* 361 : 13 : 4.

This Method is of Use in reducing the Exchanges of *Cadiz, Leghorn,* and *Genoa.* Or when the Exchange is at so many Pence, and Eighths of a Penny, (as often the Exchanges run) then multiply the given Number to reduce it into Pence, by the Pence contained in a Piece of Eight; and also multiply the said given Number apart, by the Numerator or upper Figure of the Fraction, and divide by the Denominator, or under Figure of the Fraction, and the Quotient will be Pence; which add to the other Pence produced by multiplying the given Number by the Pence contained in one of the Pieces for Exchange; then divide the total Pence by 12, &c.

Example.

Bring 296 Dollars, at 52d. $\frac{5}{8}$ *Sterling,* into Pounds, &c. Sterling?

```
       296
        52
```

```
       592
      1480
```

```
     15392
       222
```

12) 15614

2|0)130|1—2

Answer *l.* 65 : 1 : 2

296 Dollars.
        6

8) 1776

222 Pence.

Sterling Money due for 296 Dollars, at 52 *d.* $\frac{5}{8}$ *Sterling per* Dollar.

But

But *Ducats, Dollars, Crowns, Millreas,* &c. are more expeditiously cast up by the Rules of Practice hereafter to be shewn.

And so much for *Reduction.* The next Rule in *Arithmetick,* is

The GOLDEN RULE: Or RULE of THREE.

IT is called the *Golden Rule* from its excellent Performances in *Arithmetick,* as in other Parts also of *Mathematical* Learning.

And the *Rule of Three,* because from three Numbers given, proposed, or known, we find out a fourth Number required, or unknown, which bears such Proportion to the third as the second doth to the first Number. From whence also it is called, *The Rule of Proportion.*

And of this *Proportion* there are two sorts ; one called *Direct,* and the other *Indirect* or *Reverse.*

Direct Proportion is, when the second and third Numbers are multiplied together, and their Product is divided by the first.

Indirect or *Reverse Proportion* is, when the first and second Numbers are multiplied together, and their Product is divided by the first.

In *Direct Proportion,* the fourth Number, or Answer to the Question, contains the third Number as often (or as many times) as the second contains the first.

But in *Indirect Proportion,* the greater the third Number is, the less is the fourth ; and the lesser the third Number is, the greater is the fourth.

The Stating the Question.

The chiefest Difficulty that occurs in the *Rule of Three,* is the right placing the Numbers, or stating the Question ; for when that is done, you have nothing more to do, but to multiply and divide, and the Work is done.

And to this End, we are to remember, that of the three given Numbers, two of them are always of one Name or Denomination ; and the other Number is ever of the same Name with the fourth Number or Answer required ; and must always be the second or middle Number ; and the Number that asketh the Question, must still possess the third or last Place ; and the other Number of the same Name with the third, must be the first Number ; for, the first and third Numbers must always be of one Name, *viz.* both Money,

both

both Weight, both Time, or both Measure. And though they be of one Kind, yet if one of them is altered, by *Reduction*, from a high to a lower Name, then the other must be reduced to the same Name. For you must particularly note, *That if either the first or third Numbers consist of several Denominations, that is of Pounds and Shillings; or Pounds, Shillings and Pence; or of Pounds, Shillings, Pence, and Farthings; or of Tons, Hundreds, Quarters and Pounds, &c. then must they be reduced to the lowest Name mentioned.* And if one happen to be of divers Denominations, and the other but of one Name; then the Number of one Name must be reduced as low, or into the same Name with the other; as suppose the first Number is brought into Farthings, then the third Number, though but Pounds, must be brought into Farthings also. Then you are to multiply the second and third Numbers together (when the Proportion is Direct) and divide the Product by the first Number, and the Quotient thence arising will be the Answer to the Question, and in the same Name with the middle Number: And if in a small Denomination, it must be brought by Division to the highest Name, for the better understanding the Answer. You must also Note, *That if the middle Number be of several Denominations, it must be brought into the lowest mentioned.*

Example 1.

If 12 Gallons of Brandy cost 4*l.* 10*s.* what will 134 Gallons cost at that Rate?

Stated for Working thus.

Gallons.	*l.*	*s.*	Gallons.
If 12 ——	04 —	10 ———	134
	20		90
		90	12) 12060
			2|0) 100|5
			l. 50 5 *Answer.*

Here the first and third Numbers are of like Names, *viz.* both Gallons; and 134 being the Number that asketh the Question, it hath the third Place, as it always must, as before asserted; and 4*l.* 10*s.* the second Number, being of two Denominations, *viz.* Pounds and Shillings, it is reduced into the lowest mentioned, *viz.* Shillings, as before,

F 3 directed,

directed, and then the three Numbers are these, *viz.*
12—90—134; and 134 the third Number, being multi-
plied by 90, the second Number, produces 12060; which
divided by 12, the first Number, quotes 1005 Shillings,
the Name of the middle Number 90; and 1005 Shillings,
divided by 20, gives 50*l.* 5*s.* for the Answer; And for
the Proof of its truth, state it back again thus:

Example 2.

Gal.		l.	s.		Gal.
If 134 cost		50	—	5	what 12 ?

```
         20
        ----
        1005
          12
        ----
```

134) 12060 (90s. *Answer,* or 4*l.* 10*s.*
　　　1206　　the Cost of 12 Gallons,
　　　————　　and is a sure Proof of the

first Work; and the back stating and working the Proof is
as much a Question in the Rule of Three as the first.

By the foregoing Rules and Directions, and these two
Operations, you may understand the Nature of the Rule,
and Method of working, and with Ease and Certainty an-
swer any Example proposed in the Rule of Three direct:
And therefore, I shall omit what I can of verbal Directions,
and abate as much of Figure Work as is consistent with Dis-
patch, and of not leaving the Work too obscure; to save
Room, and not to be too prolix; and to this End I shall only
give the Examples stated, and a little of the Work, and
the Answers to the Questions, leaving most of the Opera-
tions to be performed by the ingenious Practitioners.

Example 3.

If 56 ℔ of Indigo cost 11*l.* 4*s.* what will 1008 ℔. cost
at that Rate?

　　℔.　　*s.*　　℔.
If 56—224—1008 ? *Answer* 4032*s.* or 201*l.* 12*s.*

Example 4.

If half a C. Wt. of Rose Copper cost 4*l.* 18*s.* what
Quantity will 14*s.* buy at that Rate?

　　s.　　℔.　　　*s.*
If 98 buy 56 what 14 ? *Answer* 8 ℔. of Copper.

Example 5.

If 4 C. 3 qrs. of Sugar cost 5*l.* 15*s.* 7*d.* what will 4
Hogsheads come to, weighing 42 C. 1 qr. 14*l.*　　　If

℔.   *d.*   ℔.

If 532—1387—4746 ; *Answer*, 12373 Pence, or 51 *l.*
11*s.* 1*d.* And the Remainder 266 ; multiplied by 4, gives
1064 ; which also divided by the first Number 532, gives
a Half-penny more ; so the whole is 51 *l.* 11*s.* 1*d.* $\frac{1}{2}$.

Any of these Examples, or any other, may be proved by
a back-stating, according as the first Example was proved.
And each Proof becomes another Question in the Rule of
Three, as was said before.

Example 6.

If I have 50 *l.* a Year Salary, how much is due to me
for 144 Days Service at that Rate ?

Days.   *l.*   Days.

If 365—50—144 ? *Answer*, *l.* 19—14—6$\frac{90}{365}$ Parts of
a Penny.

In this Example, the Product of the third by the second
Number is 7200 ; which divided by the first 365 (according
to the Rule) quotes 19 Pounds, the Name of the middle
Number and there is a Remainder of 265 : which multi-
plied by 20 according to *Reduction*, and the Product still
divided by 365, there comes out 14 Shillings ; and yet there
is a Remainder of 190, which multiplied by 12 and the
Product divided by 365, gives 6*d.* and there's a Remainder
of 90 ; which multiplied by 4 (the last inferior Name) and
divided by 365, yet it would not come to a Farthing more ;
so that the Answer is as above, 19—14—6$\frac{90}{365}$.

You are to note always, *That when any thing remains
that is reducible to an inferior or lower Name ; after multi-
plied as above, it must continually be divided by the first
Number.*

Note also; *when the first of the three given Numbers is an
Unit, or One, the Work is performed, or Answer found by
Multiplication.*

Example 7.

If I am to give 17*s.* for 1*lb.* of *Balladine* Silk, what
must I give for 264*lb.* at that Rate ?

lb.   *s.*   lb.

If   1——17——264
    17
   ——————

Answer 4488, or 224*l.* 8*s.*

Example 8.

If I buy 49 Bags of Hops, at 12 *l.* 12 *s.* 6 *d.* *per* Bag,
what come they to at that Rate ?

```
Bags.          l.      s.      d.
  1 ——— 12 ——— 12 ——— 6 ——— 49 Bags.
                         7 and by 7.
                       ──────────
                        88—07—6
                               7
                       ──────────
                        618—12—6  Answer.
```

The foregoing Work is performed by the component
Parts of *Multiplication of Money*, as taught in that Rule.

When the Third or Laſt of the three given Numbers is
an Unit or One, then the Work is performed by *Diviſion*.

Example 9.

If 12 Ells of Holland coſt 3*l.* 6*s.* what is the Price of
1 Ell at that Rate?

```
     Ells      12) s.        Ell.
If  12 ——— 66 ——— 1  Answer 5s. 6d.
            ─────────
            5 6/12 of 1s. or 6d.
```

Example 10.

If 56 Yards of Broadcloth coſt 40*l.* 12*s.* what comes a
Yard to at that Rate?

```
Yards 7)        l.   s.        Yd.
If  56 ——— 40—12 ——— 1  Answer 14s. 6d. per Yd.
       ─────────
       8)5—16
       ─────────
       0—14—6d.  Answer.
```

This Example is wrought by *Diviſion of Money*, and by
Component Parts; as before taught in the *Rule of Diviſion*.

Example 11.

If *A* owes *B* 296 *l.* 17 *s.* and compounds at 7 *s.* 6 *d.* in
the Pound; what muſt *B* take for his Debt?

```
    s. .         d.          s.
If 20 ——— 90 ——— 5937  Answer l. 111—6—4½
```

Example 12.

If a Gentleman hath an Eſtate of 500*l.* a Year, what
may he expend daily, and yet lay up 12*l.* 15*s. per* Month?

Firſt

First multiply 12*l.* 15*s. per* 12, the Months in a Year, and it makes 153 *l.* which deducted from 500 *l.* the Remainder is 347*l.* Then say,

Days.   *l.*

If 365————347, what 1 Day ? *Answer* 19*s.*

After you have reduced the Pounds into Shillings, which make 6940 ; you divide them by 365, and the Quotient is 19*s. per* Day.

The Rule of Three Reverse, or of Indirect Proportion.

WHAT *Indirect Proportion* is, hath been hinted already.

In *Direct Proportion*, the Product of the First and Fourth Numbers, is equal to the Product of the Second and Third.

But in this *Proportion*, the Product of the Third and Fourth Numbers, is equal to the Product of the First and Second.

The Method of stating any Question in this Rule, is the same with that of the *Direct Rule.*

For the first and third Numbers must be of one Name, or so reduced, as in that Rule ; and the Number that moves the Question must possess the third Place ; and the middle Number will be of the same Name with the Answer, as it is there.

To know when the Question, belongs to the Direct, *and when to the* Reverse Rule.

When the Question is stated as abovesaid, consider whether the Answer to the Question ought to be more or less than the second Number ; if more, than the lesser of the first and third Numbers must be your *Divisor.*

But if Less, then the Bigger of the two extreme Numbers must be your *Divisor.*

And if the first Number of the Three is your *Divisor,* then the *Proportion* is *Direct* ; but if the last of the Three given Numbers is your *Divisor,* the Proportion is *Indirect* or *Reverse.*

Or without Regard, either to *Direct* or *Reverse* ;
If more is required, the Lesser }
If less, the Greater   } is *Divisor.*

Examples

Examples for Explanation.
Example 1.

If 4 Men plain 250 Deal-boards in 6 Days; how many Men will plain them in 2 Days?

If 6 Days require 4 Men, what 2 Days? *Answer* 12 Men.

$$
\begin{array}{r}
6 \\
\hline
2)\,24 \\
\hline
12 \ \textit{Answer.}
\end{array}
$$

Example 2.

If a Board be 9 Inches Broad, how much in Length will make a Square Foot?

In B.   In L.   In B.
If 12 ——— 12 what 9 Inches broad?
            12

$$
\begin{array}{r}
9)\,144
\end{array}
$$

Answer   16 Inches broad.

In this Example, the first and second Numbers are multiplied together, (as they always must be) and their Product is divided by the Third; as in the Example above it, and agreeable to the aforesaid Assertion; for in the first Example, it is most certain, that 2 Days will require more Hands to perform the Work than 6 Days; therefore the Lesser of the extreme Numbers is the *Divisor*; and declares the Quotient is in the *Indirect Proportion*.

Likewise in the second Example, 9 Inches in Breadth must needs require more in Length to make a Foot, than 12 Inches in Breadth; wherefore it is in the same *Proportion* with the first Example, because the *Divisor* is the third Number.

Example 3.

How many Pounds of Coffee, at 5 s. 9 d. *per lb.* is equivalent in Value with 246 Pounds of Tea at 13 s. 4 d. *per lb.*

d.   lb.   d.   lb.
If 160 give 426, what 69? *Answer* 987 57/69.

Here it is manifest that there must be more Pounds of the Coffee than the Tea; therefore 69 is the *Divisor*, which is the third Number, &c.   *Example*

Example 4.

How many Yards of Sarcenet, of 3 *qrs.* wide will line 9 Yards of Cloth of 8 *qrs.* wide?

qrs. wide.   yds. long.   qrs. wide.

If 8——9 what 3

         8   Here the narrower the Silk
     ——   the more in Length is requir'd.

   3) 72

Yards 24 *Answer.*

Example 5.

If a Quartern Loaf weigh 4*lb.* $\frac{1}{2}$ when Wheat is 5*s.* 6*d.* the Bushel; what must it weigh when Wheat is 4 *s.* the Bushel?

d. $\frac{1}{2}$*lb.*   *d.*   *lb.*

If 66——9———48 *Answer* 6$\frac{3}{8}$

Example 6.

If in 12 Months 100*l.* Principal gain 5*l.* Interest; what Principal will gain the same Interest in 5 Months?

M.   *l.P.*   *M.*

12 ——— 100 ——— 5

    12

  5) 1200

Answer, 240 *l.* Principal.

The Double Rule of Three Direct.

IN this Rule there are Five Numbers given to find out a Sixth, in Proportion to the Product of the fourth and fifth Numbers, as the third Number bears to the Product of the first and second Numbers.

Questions in this Kind of *Proportion,* are wrought either by two Operations in the *Single Rule of Three Direct,* or by the Rule composed of the Five given Numbers, and the one may be a Proof to the other; as may be seen in the Example following.

Example

Example 1.

If 100 Pounds Principal, in 12 Months, gain 5 Pounds Interest, what will 246 Pounds Principal gain in 7 Months?

If 100 gain 5 what 246

$$ 5$$

$$1|00) \; 12|30$$
$$ 20$$

$$1|00)6|00 \quad \textit{Answer.} \; 12\textit{l.} \; 6\textit{s.}$$
$$ M. l. \quad s. M.$$

Then say again, if 12 gain 12—6 what 7

$$ 20$$

$$ 246$$
$$ 7$$

$$12) \; 1722$$
$$\text{------} \, d.$$
$$20) \; 143,6$$

$$l. \; 7,3,6 \; \textit{Answer.}$$

In the first Stating, the Answer is, that if 100*l.* gain 5 Pounds, the 246*l.* will gain 12 Pounds 6 Shillings.

Then I say in the next Stating; If 12 Months gain 12*l.* 6*s.* what will 7 Months gain? And the Answer of the Work is, *l.* 7—3---6. And so much will 246 Pounds gain in 7 Months, if 100 Pounds gain 5 Pounds in 12 Months.

You must particularly note, That in all Operations where the Answer to the Question is found by two Rules of Three, the Answer of the first Stating is ever the middle Number of the second Stating or Work; as in the preceeding Examples is plainly seen.

The

The foregoing Queftion anfwered by a Rule compofed of five given Numbers, thus :

(1) l.	(2) M.	(3) l.	(4) l.	(5) M.
If 100———	—12———	——5———	— 246———	——7
12			5	

1200	,	1230
		7

1200) 8610(7*l.*
8400

In this Work, in ftating the Queftion, the firft and fourth Numbers are made of one Name, and the fecond and fifth ; then the two firft Numbers are multiplied together for a Divifor, and the laft three Numbers are multiplied together for a Dividend, and the Quotient or Anfwer as in the fame Name with the middle Number, viz. Pounds Intereft ; as in the Work I find the firft Quotient 7 Pounds Intereft ; and fo I proceed from one Denomination to another, till I find the fame Anfwer as in the Work at two Statings, *viz.* *l.* 7—3—6.

210
20

1200)4200(3*s.*
3600

600
12

1200)7200(6*d.*
7200

(0)

This Method of Operation ferves to anfwer all Queftions in the *Double Rule of Three Direct.*

The Double Rule of Three Reverfe.

IN this Rule you muft place your Numbers in fuch Order, that your fecond and fourth Numbers may be of one Name or Denomination, and your third and fifth.

Example.

If 100 *l.* Principal, in 12 Months, gain 6 *l.* Intereft ; what Principal will gain 20 *l.* Intereft in 8 Months ?
Stated

Stated thus :

l. P.	*Mo.*	*l. Int.*	*Mo.*	*l. Int.*
(1)	(2)	(3)	(4)	(5)
If 100————12————6————8————20

```
    12                          6
   ————                        ———
   1200                    48 the Divisor.
     20
   ————
48) 24000 (500l. P. Answer.
      240
     ————
      (0)
```

In this Work, the third and fourth Numbers are multiplied together for a Divisor ; and then the first is multiplied by the second, and that product by the fifth Number, and the Product 24000 is divided by 48, and the Quotient is 500l. Principle ; which is what will gain 20l. Interest, in 8 Months, and the Answer to the Question, as may be seen in the Work.

Rules of Practice.

THESE Rules are so called from their frequent Use and Brevity in casting up most Sorts of Goods in Merchandize.

Note, *That any Question in the Rule of Three, when the first Number in Stating is* 1, *it is most briefly done by these Rules called* Practice.

But previous to these Rules, it is necessary to have the following Tables by Heart.

Parts of a Shilling. Of a Pound.

d.		
6 is	$\frac{1}{2}$	$\frac{1}{40}$
4	$\frac{1}{3}$	$\frac{1}{60}$
3	$\frac{1}{4}$	$\frac{1}{80}$
2	$\frac{1}{6}$	$\frac{1}{120}$
1 $\frac{1}{2}$	$\frac{1}{8}$	
1	$\frac{1}{12}$	

Parts of a Pound.

s. d.	
10 0 is	$\frac{1}{2}$
6 8	$\frac{1}{3}$
5 0	$\frac{1}{4}$
4 0	$\frac{1}{5}$
3 4	$\frac{1}{6}$
2 6	$\frac{1}{8}$
2 0	$\frac{1}{10}$
1 8	$\frac{1}{12}$
1 0	$\frac{1}{20}$

Parts

Parts of a Shilling.   *Example* 1.

6d. is | 426 Pounds of Sugar, at 6d. *per lb.*
½ 1s. |
     2|0) 21|3

     l. 10|13 *Answer.*

Here 6d. being the Price of each *lb.* and the Half of a
Shilling; therefore the Half of 426 is taken, and gives
213s. or 10l. 13s.

Example 2.

4d. is ⅓ | 512 *lb.* of Cheese, at 4d. *per lb.*
of 1s. |
     2|0)17|0 – 8d.

     l. 8, 10,8 *Answer.*

Here 4d. is ⅓ of a Shilling; therefore the third Part of
512 is 170s. and ⅔ of a Shilling, or 8d. remains.

Note, *Always what remains is of the same Name with
the Dividend, which here is Groats, for the Pounds of Cheese
are at a Groat each.*

Example 3.

3d. is ¼ | 246 Yds. of Ribband, at 3d. *per Yard.*
of 1s. |
     2|0) 6|1 – ½ of a Shilling, or 6d.

     l. 3 – 1 – 6 *Answer.*

Here the Yards are divided by 4, because 3d. is the 4th
of a Shilling; and it quotes 61 Shillings, and 2 remains,
or two 3 Pences; so the Answer is l. 3---1---6d.

And thus may any proposed Question be answered, be-
longing to the first Table, or Parts of a Shilling; that is
by dividing the given Number by the Denominator of the
Fraction, and the Quotient will always be Shillings, which
(the Remainders being known as above) bring into Pounds,
by dividing by 20, &c.

When the Price of the Integer is at a Farthing, a Half-
penny, or three Farthings more than the Price of Pence
mentioned, then for those Farthings take their even Part
of the foregoing Quotient taken for the even Part of a
Shilling, and add, &c.

                          Example.

Examples.

249 Ells of Canvas, at 4½ *per* Ell.

4*d.* is ⅓ ½*d.* is ⅛ of 4*d.*	83 10 ⅜ or 4*d.* ½ *Answer.* 2|o)9|3—4½ *Answer.* 4-13-4½

In this Example I divide by 3 for the Groats, as being the Third of one Shilling, and it quotes 83*s.* then I consider that a Half-penny is the Eighth of 4*d.* therefore I take the eighth Part of the Groat Line, or 83*s.* and that produces 10*s.* and ⅜ of a Shilling, or 4*d.* ½; then the two Lines being added together, make 93*s.* 4*d.* ½, or 4*l.* 13*s.* 4*d.* ½, as in the Work.

Parts of a Pound.

10*s.* is ½ | 254 Yards of Cloth at 10*s. per* Yard.

l. 127 *Answer.*

Here the Half of 254 is taken, because 10*s.* is the Half of a Pound.

s.   *d.*
6   8 is ⅓ | 972 Gallons at 6*s.* 8*d. per* Gallon.

l. 324 *Answer.*

Here the third Part is taken, because 6*s.* 8*d.* is the Third of a Pound; and the Answer is *l.* 324.

And thus may any Question proposed be answered belonging to the second Table, or Parts of a Pound; that is, by dividing the given Number by the Denominator of the Fraction, and the Quotient will always be Pounds; and if any thing remains, it is always so many Halves, Thirds, Fourths, or Fifths, &c. of a Pound, according to the Denominator that you divide by.

If the Price be Shillings and Pence, or Shillings, Pence, and Farthings, and no even Part of a Pound; then multiply the given Number by the Shillings in the Price, and take even Parts for the Pence, or Pence and Farthings, and add the several Lines together, and they will be Shillings; which Shillings bring into Pounds, as before.   *Ex-*

Examples.

	lb.	s.	d.			Ells	s.	d.
	426	at 4	—9			216	at 2	—3½
		4					2 per Ell.	

```
                    1704                              432
6d. ½ |             213        3d. ¼                   54
3d. ¼ |             106 ½ 6d. ½d. ⅙                     9
                    of 3d.
      2|0) 202(3                              2|0)49|5 s.

      l. 101-3-6 Anſwer.                      24|15 Anſwer.
```

396 Gallons of Brandy, at 7s. 9d.
　　　　　　　　　　　　　　　 per Gallon,

```
                    7

                  2772
6d. ½ 1s. |        198
3d. ½ 6d. |         99

        2|0) 306|9

        l. 153|9 Anſwer.
```

When the Price is 10d. only annex 0 to the Right of the given Number (which is multiplying by 10) and they are Pence; which divide by 12, and by 20.

Example；426 lb. of Hops at 10d. per lb.

```
        12)4260

        2|0)35|5

        l. 17—15 Anſwer.
```

When the Price is 11d. set down the Quantity twice in the Form of Multiplication, and add the two Lines together, then divide by 12, and 20.　　*Example.*

426 lb. of Copper at 11d. per lb.

```
        426

        12)4686 Pence

        2|0) 39|0—6

        l. 19—10—6 Anſwer.
```

If

If the Price be 11*d*. $\frac{1}{2}$, take Half the uppermoſt Line, &c.

Example.

942 *lb.* of Tobacco, at 11*d*. $\frac{1}{2}$ *per lb.*
942
571
───────
12) 10833 *Pence*

2|0)90|2—9*d*.

l. 45 2—9 *Anſwer.*

When the Price is 1*s*. only divide by 20.

Example.

2|0) 96|4 *lb.* of Tobacco, at 12*d. per lb.*

l. 48,4 *Anſwer.*

When the Price is 2*s*. it is done at Sight, by doubling the laſt Figure towards the Right-hand, and ſetting it apart for Shillings; and the Figures toward the Left are Pounds.

Example.

596 Gallons of Spirits, as 2*s. per* Gallon.

l. 59—12 *Anſwer.* Here the Double of 6 is 12*s*. and the 59 are Pounds.

From this Method of working by 2*s*. a Multitude of Examples may be moſt expeditiouſly wrought, *viz.*

	Ells.	Yards.
	444 Cambrick.	426 at 3 *s*. 6 *d*.
	—— at 5 *s*. 9 *d*	—— *per* Yard,
	44—8 at 2 *s*.	42—12 at 2 *s*.
	44—8 at 2 *s*. 1*s*. $\frac{1}{2}$ 2*s*.	21— 6 at 1 *s*.
1*s*. $\frac{1}{2}$ of 2*s*.	22—4 at 1 *s*. 6*d*. $\frac{1}{2}$ 1*s*.	10—13 at 6 *d*.
6*d*. $\frac{1}{2}$ of 1*s*.	11—2 at 6 *d*.	
3*d*. $\frac{1}{2}$ of 6*d*.	5—11 at 3*d*. *Anſwer. l.*	74—11 at 3*s*. 6*d*.

Anſwer, 127—13 at 5—9*d*.

The Operation of theſe two Examples is ſo intelligibly wrought, that there is no need of verbal Explanation.

Again,

Again, 548 Yards of Broadcloth, at 12s. 6d. *per* Yard.

l. 54. 16 at 2s. 6 times 2s. is 12s.

6d. is	328, 16 at 12s.	Note, *That* 13l. 14s. *is*
¼ of 2s.	13, 14 at 6d.	*the fourth Part of* 54l. 16s.
		the two Shilling Line.

l. 342, 10 *Answer.*

Or multiply by 12 s. and take Half of the given Number for the 6d. thus :

$$
\begin{array}{r}
548 \text{ Yards.} \\
12 \\
\hline
6576 \\
\tfrac{1}{4})\ 274 \\
\hline
2|0)\ 685|0
\end{array}
$$

l. 342—10 *Answer.*

When the Price is an even Number of Shillings, multiply the Number of Integers by Half the Price, and double the first Figure of the Product for Shillings and carry as is usual in Multiplication, and the other Figures towards the Left will be Pounds.

Example.

296 Yards of Cloth, 14s. *per* Yard.
  7 the Half of 14 Shillings.

l. 207—4s. *Answer.*

Here 7 times 6 is 42 ; the Double of 2s. is 4s. &c.
When the Price is an odd Number of Shillings, work for the even Number as above ; and for the odd Shillings, take the $\frac{1}{20}$ of the given Number, and add them together.

Example.

496 Gallons of Citron Water, at 17s. *per.* Gal.
  8 the Half of 16, or even Part.

$$
\begin{array}{l}
396—16s. \\
\ 24—16 \\
\hline
421—12 \text{ *Answer.*}
\end{array}
$$

In

In this Example I say, 8 times 6 is 48; the Double of 8 is 16s. and carry 4; then 8 times 9 is 72, and 4 is 76; 6 and carry 7; and 8 times 4 is 32, and 7 is 39, then the Half of 4 is 2, &c.

Even Parts of a Pound.

	Yards.	Nobles s. d.
10s.	426 of Cloth, at 10s.	429 at 6—8 each.
is ½	—— per Yard	
	213 Answer, 6—8d. ⅓	l. 143 Answer.

	lb.		lb.
	598 of Cochineal, at		154 of Indigo, at
	——5s. per lb.	4s.	——4s. per lb.
5s	l. 149¾ or 10s. Answer.	is ⅕	l. 30⅘ or 16s. Ans.
is ¼			

3s. 4d.	542 Zealand Dollars, at 3s. 4d.
is ⅙	
	90⅔ or 6s. 8d. Answer l. 90—6—8 Sterling.

In all these Examples of Practice, I divide by the Denominator of the Fraction, and what remains is always of the same Name with the Denominator; as one Half, Thirds, Fourths, Sixths, or Eights of a Shilling, or of a Pound, &c.

If the Price be Half a Crown, divide by 8; if at 20d. or 1s. 8, divide by 12, &c.

When the Price is Shillings and Pence, and no even Part of a Pound; multiply the given Number by the Shillings, and take Parts of it for the Pence, as directed before.

Example.

	246 Marks, 13s. 4d.	
	13	
	———	For the Groat, I say the 3's
4d. ⅓	738	in 24, 8 times; and the 3's in
1s.	246	6, twice, &c.
	82	
	———	
	2|0)328|0s.	
	———	
	l. 164 Answer.	

But

But this Example may be sooner done by multiplying the given Number by 2, and dividing that Product by 3 (because a Mark is two Thirds of a Pound) thus:

$$\begin{array}{r} 246 \\ 2 \\ \hline 3)\,492 \\ \hline l.\ 164 \end{array}$$

l. 164 *Answer and Proof.*

I have not here Room to speak of the various and almost infinite Methods and Rules of *Practice* (having several other Subjects and Things to treat on) but shall leave some general Rules, which if heedfully noted, will be of great Use to Learners; and are these, viz.

1. When the Price is Parts of a Farthing; or of a Penny, as $\frac{3}{4}$, $\frac{5}{6}$, $\frac{7}{8}$, &c. then multiply the Integers by the Numerator, and divide by the Denominator, and the Result will be either Farthings or Pence; which reduce to Pounds, &c.

2. When the Price is Pence, and no even Part of a Shilling; as suppose 5*d.* 7*d.* 8*d.* or 9*d.* then it may be done by taking their Parts, as 3 *d.* and 2 *d.* is 5 *d.* and 4*d.* and 3*d.* is 7*d.* and 4*d.* and 4*d.* is 8*d.* and 6*d.* and 3*d.* is 9*d.* but it is an easy and sure Way to multiply the given Number by 5, 7, 8, or 9, and then the Product is Pence; which reduce to Pounds by *Reduction.*

3. When the Price is Pence, and Parts of a Penny; as 1*d.* $\frac{1}{4}$, 2*d.* $\frac{1}{2}$, or 6 $\frac{3}{4}$, then work for the Penny by taking the $\frac{1}{12}$; for 2 *d.* the $\frac{1}{6}$; and for 6 *d.* the $\frac{1}{2}$: Then for the Farthings, take the $\frac{1}{4}$ of the Penny Line, and for $\frac{1}{2}$, $\frac{1}{2}$ of the Two-penny Line; and for $\frac{3}{4}$, take $\frac{1}{8}$ of the 6 Penny Line; then add their Results together; and the total will be Shillings, which reduce to Pounds by dividing by 20. Or by the sure Way of bringing the mixt Number into the lowest Denomination; as 1*d.* $\frac{1}{4}$, into 5 Farthings, 2*d.* $\frac{1}{2}$, into 5 Halfpence, and 6*d.* $\frac{1}{2}$, into 27 Farthings; then multiply the Integers by 5, and the Product is Farthings; or by 5 Halfpence, and the Product will be Halfpence; or by 27 Farthings, and the Product will be Farthings; which, whether Farthings or Pence, reduce to Pounds, &c.

4. When the Price is Shillings and Pence, or Shillings, Pence, and Farthings, multiply the Integers by the Shillings of the Price, and take Parts for the Pence, or Pence and Farthings, &c.   5. If

5. If the Price be Pounds and Shillings, or Pounds, Shillings, Pence and Farthings; multiply by the Shillings in the Price, that is, in the Pounds and Shillings, and take Parts for the Pence and Farthings.

6. When the Number of Integers hath a Fraction annexed or belonging to them; as $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, &c. then take $\frac{1}{4}$, $\frac{1}{2}$, or $\frac{3}{4}$ of the Price of one of the Integers, and add that to the other Results.

TARE and TRETT, &c.

Gross Weight is the Weight of the Goods in Hundreds, Quarters and Pounds, with the Weight of the Hogshead, Cask, Chest, Bag, Bale, &c. that contains the Goods.

Tare is allowed to the Buyer for the Weight of the Hogshead, Cask, Chest, Bag, Bale, &c.

Tret is an Allowance made for Waste, Dust, &c. in sundry Sorts of Goods, as Tobaccoes, Cottons, Pepper, Spices, &c. and is always 4 lb. per 104 lb. Suttle, and found by dividing the Suttle Pounds by 26, because 4 times 26 makes 104 lb. When the Gross Weight is brought into Pounds, and before the Tare is deducted, they are called *Pounds Gross*; and after the Tare is substracted, the remaining Pounds are called *Pounds Suttle*; which divided by 26 (as said before) quotes Pounds Trett, &c.

Tare at so much per Cask, Hogshead, Bag, &c.

The Allowances for Tare are variously wrought; as by the following Examples.

In 12 Casks of Indigo, containing 45 C. 1 qr. 14 lb. Gross, Tare 30 lb. per Cask, how many Pounds Nett?

12 Casks	C.	qr.	lb.
	45	1	14
360 Pounds Tare.	45		
	45		
	4542		

5082 Pounds Gross.
Substract 360 Pounds Tare.

Answer 4722 Pounds Nett.

In this Example, the *lbs.* Tare of one is multiplied by the Number of Casks, and the Product is 360 Pounds Tare, and the Gross Weight is reduced into Pounds by the Method

shewn

ſhewn in Reduction of Weight; and then the Pounds
Tare are deducted from the Pounds Groſs, and the Re-
mainder are Pounds Nett, viz. 4722, as in the Work.

When the Tare is at ſo much *per C. wt.* multiply the
Number of Hundreds by the Tare, and take Parts for the
odd Weight, and add it to the Tare found by Multiplica-
tion, and divide it by 112, to bring it into Groſs Weight,
in order for Subſtraction.   *Example.*

What is the Nett Wt. of 12 Caſks of Argol, Wt. Groſs.

```
      84 C. 2 qrs.   14 lb.
      14 Tare per C.
                                C. qrs. lb.
      ───
      336                       84—2—14 Groſs.
       84                       10—2—8¼ Tare.
        7 for Half C.           ──────────
        1 ¼ for 14 lb.          74—0—5¼ Nett Wt.
```

```
112).1184¾(10 C.
     112
     ───
```

64 *lb.* or half a *C.* and 8 *lb.*

The Tare in the laſt Example is to be found by the fore-
going Directions, 10 *C.* 2 *qrs.* 8½ ¼, which ſubſtracted as
in the Work, leaves 74 *C.* 0 *qrs.* 5 *lb.* ¼, for the Nett Wt.

But the foregoing Example may be ſooner done by *Prac-
tice*, thus:

```
            C.  qrs.  lb.
        8)84—2—14 Groſs.
        ──────────────
    ſub. 10—2—8¾ Tare.
        ──────────────
        74—0—5¼ Nett.
```

In this Method, the Groſs Weight is divided by 8, be-
cauſe 14 *lb.* is one Eighth of 112*lb.* and the Remainder is
reduced into the next inferior Name, and ſtill divided by
8, to the End, and then deducted as above, and the Nett
Weight is the ſame as by the other Way. And ſo may any
Tare *per Ct.* be found, if the Tare be an even Part of 112*lb.*
as 14 is one Eighth, and 7*lb.* is the Half of that, and 16*lb.*
is one Seventh, and 8*lb.* is Half of that, &c. that is, if
the Tare be at 7 *lb. per C.* find it for 14 *lb.* as before, and
then take the Half of that for 7*lb. per C.* Tare, the like for
8 *lb.*

8*lb.* per *C.* Tare; take one Seventh for 16*lb.* and then the Half of that for 8*lb. per C.* Tare.

Of TRETT.

What *Trett* is, when allowed, and how found, hath been ſaid already; now I ſhall give an Example for Explanation as follows.

Bought ſix Hogſheads of Tobacco, containing Groſs and Tare as follows, *viz.*

N.	C. qrs. lb.		lb.
1 qt.	4—1—20	Tare	80
2	5—2—19		100
3	6—3—18		102
4	7—3—12		104
5	8—2—13		106
6	9—1—14		110

26) 4198(161 *lb.* Trett,   42—3—12   602
26 . .   42
———   42
159   42|96
156
———   4800 Pounds Groſs.
   38   ſubſtract   602 Pounds Tare.
   26   ———
———   4198 Pounds Suttle.
   12   deduct   161 $\frac{6}{13}$ Pounds Trett.
                      ———
                   4036 $\frac{7}{13}$ Pounds Nett.

There are ſome few other Rules, ſuch as Barter, or exchanging Goods for Goods; alſo Exchange for Coin, Profit, Loſs, &c. but all of them being done either by the Rule of Three, or by Rules of Practice, it is therefore here unneceſſary to enlarge upon them.

Of FRACTIONS Vulgar and Decimal.

WHAT *Fractions* are, hath already been hinted in the Rule of *Diviſion*, from whence they ariſe; for the Remainder is a ſuppoſed Part of the Diviſor; as admit 54*l.* is divided into Twelve equal Parts, the Quotient is 4; and the Remainder 6: So that here 6 is ſix Parts of 12, or ſix Twelfth's, equal to a Half; for 6 is the $\frac{1}{2}$ of 12; and ſet down in this Form $\frac{6}{12}$ and underſtood by theſe Names, *viz.*

6 *Nume-*

6 *Numerator.*

12 Denominator.

The *Numerator* is above the ſhort Line, and ſheweth the Number of Parts ; and the *Denominator* ſtands under the Line, and declares the Number of equal Parts the Integer or whole Number is divided into ; as above 54 *lb.* is divided into 12 Parts, and the Quotient ſays there are 4 of thoſe 12 Parts contained in 54, and 6 remains, or 6 Twelfths of a Pound, or 10 *s.* as above ſaid.

Fractions are thus ſet down and read, *viz.* $\frac{1}{4}$, or one Fourth ; $\frac{1}{2}$, one Half, $\frac{1}{3}$, one Third, $\frac{1}{5}$, one Fifth ; $\frac{1}{6}$, one Sixth ; $\frac{2}{3}$ two Thirds ; $\frac{2}{4}$, two Fourths ; $\frac{2}{6}$, two Sixths ; $\frac{5}{7}$, five Sevenths, *&c.*

Fractions are either proper or improper. A proper Fraction hath its Numerator leſs than the Denominator ; as $\frac{5}{8}$, five Eighths ; $\frac{24}{56}$, twenty-four Fifty-Sixths, *&c.*

An improper Fraction hath its Numerator greater than the Denominator ; as $\frac{7}{3}$, ſeven Thirds ; $\frac{48}{15}$, forty-eight Fifteenths, *&c.*

Again, Fractions are either Simple or Compound ; ſimple when Part of an Integer or Thing hath but one Numerator, and one Denominator ; as $\frac{3}{4}$ of a Pound Sterling $\frac{1}{2}$ of a C. Weight, $\frac{2}{3}$ of a Ton, $\frac{5}{6}$ of a Gallon, *&c.* Compound, is a Fraction of a Fraction, as the $\frac{1}{2}$ of a $\frac{1}{4}$ of a Pound Sterling is equal to Half a Crown ; or when one is divided into any Number of Parts, and thoſe Parts again ſubdivided into Parts, *&c.*

Fractions are of two Kinds, *viz. Vulgar* and *Decimal. Vulgar* Fractions are as declared before. *Decimal* Fractions are artificially expreſſed by ſetting down the Numerators only, the Denominators being underſtood ; and are always a Unit with as many Cyphers annexed as there are Places in the Numerator ; and therefore muſt be either 10, or ſome Power of 10, as 100, 1000, 10,000, or 100,000, *&c.*

Decimal Fractions appear as whole Numbers, (and in the general ſo wrought) but are diſtinguiſhed from them by a Point or a Comma prefixed thus, ,5, and is read five Tenths; ,32, thirty-two Hundredths ; ,256, two Hundred 56 Thouſandths : But of *Decimal* Fractions and their Uſe hereafter.

Reduction of Vulgar Fractions, is to fit or prepare them for *Addition, Subſtraction,* &c.

G

1. To

1. *To Reduce a mixt Number to an improper Fraction.*

Rule.

Multiply the Integer by the Denominator, and take in the Numerator.

Example.

Reduce 12 Gallons $\frac{3}{4}$ to an improper Fraction, thus,

$$\begin{array}{r} 4 \\ \hline 51 \end{array}$$

4 *Answer*, 51 Fourths, or 51 Quarts.

2. *To reduce an improper Fraction to a whole or mixt Number.*
Rule. Divide the Numerator by the Denominator.

Example.

Reduce the last Example to a whole or mixt Number, *viz.*

$$\begin{array}{r} 51 \\ \hline 4 \end{array} \qquad \begin{array}{r} 4) 51 (12 \\ \hline 48 \\ \hline 3 \text{ Remainder.} \\ 4 \text{ Divisor.} \end{array}$$

Here 12 Gallons is the whole Number, and $\frac{3}{4}$ the Fraction, the same with 3 Quarts.

3. *To reduce Fractions to a common Denominator.*

Rule.

Multiply the Numerator of each Fraction into all the Denominators, except its own, and the Product will be a Numerator to that Fraction; and then do so by the next, &c.

Example.

Reduce $\frac{2}{3}$, and $\frac{5}{6}$ of 20s. or any other Integer, or Thing, to a common Denominator; say twice 4 is 8, and 6 times 8 is 48, for a new Numerator to $\frac{2}{3}$; then say, 3 times 3 is 9, and 6 times 9 is 54, for a new Numerator to $\frac{3}{4}$; lastly, say, 5 times 4 is 20, and 3 times 20 is 60, the Numerator to $\frac{5}{6}$; Then, to find the common Denominator, say 3 times 4 is 12, and 6 times 12 is 72, the common Denominator: So that $\frac{48}{72}$ is equal $\frac{2}{3}$, $\frac{54}{72}$ to $\frac{3}{4}$, and $\frac{60}{72}$ to $\frac{5}{6}$. And thus proved;

$\frac{2}{3}$ of

$\frac{2}{3}$ of a Pound is	13	4	48	}	Added together
$\frac{3}{4}$ ditto	15	0	54	}	make 162.
$\frac{5}{6}$ ditto	16	8	60	}	

45   0   162 Common Denominator.

Here the several Numerators are added together, and they make 162, which placed over the common Denominator 72, make the Improper Fraction $\frac{162}{72}$; and its Value is found as before directed. *To reduce an improper Fraction to a whole or mixt Number*; as may be seen in the foregoing Page.

4. *To reduce a Fraction into its lowest Terms.*

Rule.

If there are even Numbers, take Half of the Numerator and Denominator as long as you can; and then divide them by any Digit Number (*i. e.* 3, 4, 5, 6, *&c*) that will leave no Remainder in either.

Example.

Reduce $\frac{56}{84}$ into its lowest Terms; say, the $\frac{1}{2}$ of 56 is 28, and the $\frac{1}{2}$ of 84 is 42; and then, the $\frac{1}{2}$ of 28 is 14, and the $\frac{1}{2}$ of 42 is 21. So the Fraction $\frac{56}{84}$ is reduced to $\frac{14}{21}$. And since they both are not to be halved any longer; for though you can halve 14, yet you cannot 21, without Remainder; try therefore to divide them by some other Digit Number; and you will find, that 7 will divide both Numerator and Denominator without any Remainder; then say, the 7's in 14, twice; and the 7's in 21, three times: So is the Fraction $\frac{56}{84}$ reduced into its lowest Terms, $\frac{2}{3}$ two Thirds; and is the same in Value with $\frac{56}{84}$, and done in this Form;

$$\begin{array}{c|c|c|c} & 2 & 2 & 7 \\ 56 & 28 & 14 & 2 \\ \hline 84 & 43 & 21 & 3 \end{array}$$

And the Certainty that $\frac{2}{3}$ is the same in Value with $\frac{56}{84}$ is found by multiplying any Interger by the Numerator of each Fraction, and dividing by the Denominator of each Fraction. *Example.*

Example.

Let the Integer be 1 l. Sterling, or 20 s.

The beſt Way.	The common Way.
s.	s.
20	20
2	56
3) 40	84)1120(13s.
13s. 4d.	84·
	280
	252
	28
	12
	336(4d.
	336
	(0)

13 s. 4 d.

Here it is manifeſt, that by working by a Fraction in its loweſt Terms, much Time and Figures are ſaved. In one Operation, 20, the Interger is multiplied by 2, and the Product 40 divided by 3, and there remains 1, or $\frac{1}{3}$ of a Shilling, or a Groat, as in the other Work.

There are other Methods of reducing a Fraction into its loweſt Terms; but in my Opinion, none ſo ready as the foregoing.

5. To reduce a compound Fraction into a ſimple One of the ſame Value.

Rule. Multiply the Numerators together for a Numerator, and the Denominators together for a Denominator.

Example.

Reduce $\frac{2}{3}$ of $\frac{3}{4}$ of $\frac{5}{6}$ of a Pound Sterling, into a ſimple Fraction. Say twice 3 is 6, and 5 times 6 is 30, the Numerator: Then 3 times 4 is 12; and 6 times 12 is 72, the Denominator. So $\frac{30}{72}$ of a Pound is equivalent to $\frac{2}{3}$ of $\frac{3}{4}$ of $\frac{5}{6}$ of a l. Thus proved, $\frac{5}{6}$ of a l. is 16 s. 8 d. and $\frac{3}{4}$ of ditto, or 16s. 8d. is 12s. 6d. and $\frac{2}{3}$ of 12s. and 6d. is 8s. 4d. the Anſwer: And multiplying 20 by 30, and dividing by 72, gives the ſame Anſwer, as in the following Work is plain.

20

```
              20
              30
              ⌐
   72) 600 (8s.  |
        576       |
                  |
         24 Remains  ⟩  8s. 4d.
         12 Multiply  |
                      |
   72) 288 (4d.   |
        288          |
                     |
         (0)      ⌐
```

6. To find the Value of any Fraction, whether of Coin, Weight or Measure.

Rule. Multiply the Integer by the Numerator, and divide by the Denominator; and if any Thing remains, multiply it by the Number of Units of the next inferior Denomination.

Example.

What is $\frac{30}{72}$ of a Pound, or 20s.? the foregoing Example of Proof to the compound Fraction $\frac{2}{3}$ of $\frac{3}{4}$ of $\frac{5}{6}$, and as it is worked there, it need not again be repeated.

Again, What is $\frac{5}{6}$ of a Ton Weight?

```
                    C.
               20 the Integer.
                5 the Numerator.
                ──
The Denominator 6) 100
                   ───
                16—4 remains.
                 4 qrs. 1 C.
                 ──
              6) 16
                 ──
        C. qrs. 2—4 remains.
                28 lb. 1 qr.
                ───
              6) 112
                 ───
    Answer,         lb. 18—4
16 C. 2 qrs. 18 lb. ⅔     ⁶
                  G 3
```

Here

Here the Integer 20 C. is multiplied by the Numerator 5, and the Product 100 divided by the Denominator 6, and the Remainder 4 is multiplied by the Parts of the next inferior Denomination, &c. and the Answer is 16 C. 2 qrs. 18 lb. ⅘ or ⅔ of a Pound Weight, as in the Work.

Addition of Vulgar Fractions.

IF the Fractions to be added have a common Denominator, add the Numerators together for a Numerator, and place it over the common Denominator.

Example.

Add ⅖, ⅗, and ⅘ of a Pound Sterling together. Say 2 and 3 is 5, and 4 is 9, the Numerator; which place over 5, the common Denominator, thus, ⁹⁄₅, and this improper Fraction ⁹⁄₅ is in Value 36 s. for 9 times 4 s. (the 5th of a Pound) is 36 s. thus: Here ⅕ is 16 s. I say the 5's in 9, once, and 4 remains, l. 1 ⅘ which is ⅘ of a Pound.

$$5)\ 9$$

But if the Fractions to be added have unequal Denominators, then they must be reduced to a common Denominator, by a Rule before shewn, before Addition can be made: and then proceed as above.

2. When mixt Numbers are to be added, work with the fractional Parts as before, and carry the fractional Value to the whole Numbers.

Example.

Add 25 l. ¾ to 12¼, thus: 25¾
                            12¼

l. 38 Answer.

Here 1 and 3, the Numerators, make 4; and ⁴⁄₄ is 1, and 2 is 3, and 5 makes 8; and 1 and 2 is 3, and the Answer is 38.

Or they may be reduced to improper Fractions, thus:

25¾	12¼	103
4	4	49
103	49	4) 152
4	4	38 Pounds.

Here the Numerators are added, and their Total is 152; which divided by 4, the common Denominator, quotes 38 Pounds, the same Answer as above.

3.

3. When Compound Fractions are to be added to Simple Ones, reduce the Compound Fraction to a Simple One, as before directed; and then proceed as above.

Example.

Add $\frac{2}{8}$ and $\frac{3}{4}$ to $\frac{1}{2}$ of $\frac{2}{4}$ of a Pound; thus, once 2 is 2 and twice 4 is 8, the compound Fraction; then add saying, 2 and 3 is 5, and 2 is $\frac{7}{8}$, equal in Value to 17s. 6d.

Subſtraction of Vulgar Fractions.

IN this Rule, the Fractions muſt have a common Denominator, or be reduced to one, before Deduction can be made.

Example.

What is the Difference between $\frac{1}{4}$ and $\frac{3}{4}$? Anſwer $\frac{2}{4}$; and proved by Addition; for $\frac{1}{4}$ and $\frac{2}{4}$ make $\frac{3}{4}$ or 3 Quarters.

Note, The Difference between the Numerators is the Difference of the Fractions.

Again, from $\frac{3}{4}$ of a Pound, take $\frac{5}{12}$; Here the Fractions are to be reduced to a common Denominator; 36 the firſt Numerator, and 20 the ſecond Numerator, and their Difference is 16, and 48 is the common Denominator; ſo that $\frac{16}{48}$, or $\frac{1}{3}$ in its loweſt Terms, is the Difference between $\frac{3}{4}$ of a Pound, and $\frac{5}{12}$ of a Pound, that is 6s. 8d.

To ſubſtract a Compound Fraction from a Simple one.

Rule. Reduce the Compound Fraction to a ſimple One, and then work as before.   *Example.*

From $\frac{13}{14}$ take $\frac{2}{3}$ of $\frac{8}{9}$; ſay twice 8 is 16, and 3 times 9 is $\frac{16}{27}$, the compound Fraction: Then $\frac{13}{14}$ and $\frac{16}{27}$ muſt be reduced to a common Denominator, thus; 13 times 27 is 351, the firſt Numerator; and 14 times 16 is 224, the ſecond Numerator, and 14 times 27 is 378, the common Denominator. Then ſubſtract 224, the ſecond Numerator, from 351, the firſt Numerator, and the Remainder is 127, which place over 378, the common Denominator, thus, $\frac{127}{378}$ *Anſwer.*

When a ſimple Fraction is to be deducted from a whole Number.

Rule. Subſtract the Numerator of the Fraction from the Denominator, and Place the Remainder over the Denominator, and carry 1 to ſubſtract from the whole Number, &c.

Example.

From 12l. take $\frac{5}{8}$ thus; ſay 5 (the Numerator) from 8 (the Denominator) and there remains 3, which place over the Denominator 8, thus, $\frac{3}{8}$, then 1 from 12 and there remains 11; ſo the Anſwer is, l. 11, $\frac{3}{8}$, or 11—7—6, as may be proved by the whole Numbers.   G 4   *Mul-*

Multiplication of Vulgar Fractions.

Rule. MUltiply the Numerators into one another for a Numerator of the Product; and then do the same by the Denominators, for a Denominator of the Product.

Example.

Multiply $\frac{3}{4}$ of a Pound, by $\frac{5}{6}$ of ditto; say 3 times 5 is 15, the Numerator; and 4 times 6 is 24, the Denominator; so the Answer is $\frac{15}{24}$, or in its lowest Terms $\frac{5}{8}$.

You are to Note, That Multiplication in Fractions lessens the Product, tho' in whole Numbers it augments it; as above, $\frac{5}{8}$ or 12s. 6d. is less than $\frac{5}{6}$ or 16s. 8d. and also less than the other Fraction $\frac{3}{4}$ or 15s. The Reason of which I have not here Room to insist on; but it is given in my *Arithmetick in Multiplication of Vulgar Fractions*; to which Book I refer the Reader for that, and sundry Enlargements in the several Rules in the Science of *Arithmetick.*

2. *To multiply a whole Number by a Fraction.*

Rule. Multiply the Integer by the Numerator of the Fraction, and place the Product over the Denominator.

Example.

Multiply 56l. by $\frac{3}{4}$

$$\begin{array}{r} 56 \\ 3 \\ \hline 168 \\ \hline 4 \end{array} \Big\} Facit.$$

This improper Fraction $\frac{168}{4}$ reduced according to Rule, makes but 42 l. which is less than 56; and confirms what was before asserted, *viz.* that Multiplication of Fractions lessens the Product, &c.

3. *To multiply a Simple by a Compound Fraction.*

Rule. Reduce the Compound Fraction to a Simple One, as before taught, and Work as above.

Example.

Multiply $\frac{6}{8}$ of a Pound, by $\frac{2}{3}$ of $\frac{3}{4}$ of a Pound: Say, 6 times 6 is 36, and 8 times 12 is 96. So that the Answer is $\frac{36}{96}$, or $\frac{3}{8}$ in its lowest Terms; equal to 7s. 6d.

Division of Vulgar Fractions.

Rule. MUltiply the Numerator of the Divisor into the Denominator of the Dividend, and the Product is the Denominator of the Quotient; and then multiply

tiply the Denominator of the Divisor into the Numerator of the Dividend, and the Product will be the Numerator of the Quotient.

Example.

Divide $\frac{15}{16}$ by $\frac{2}{3}$; $\frac{2}{3}$) $\frac{15}{16}$ ($\frac{45}{32}$ Quotient.

Here 16 multiply by 2, gives 32; and 15 by 3, gives 45; so that the Quotient is $\frac{45}{32}$, equal to $1\frac{13}{32}$, as in the Work.

Again, Suppose $\frac{24}{36}$ was divided by $\frac{2}{3}$ the Quotient will be $\frac{72}{72}$ equal to 1 Integer, or whole Thing. And so any other Example.

Reduction of Decimal Fractions.

WHAT a *Decimal Fraction* is, hath been already shewn. The next Step is, how to reduce a Vulgar Fraction into a Decimal; which is no more than to annex Cyphers at Discretion (that is, 2, 3, or 4, &c.) to the Numerator, and then divide it by the Denominator.

Example 1.

Reduce $\frac{3}{4}$ of a Pound Sterling to a Decimal.

4) 300
— that is, 75 Hundredths, equal to 3 qrs. of any
,75   Thing, whether Money, Weight, Measure, &c.
as being $\frac{3}{4}$ of 100; and so, 25 Hundredths is, in Decimals, the Quarter of any Thing, as being $\frac{1}{4}$ of 100; and five Tenths expresses the Half of any Thing, as being the $\frac{5}{10}$ of 10.

In Reduction of Decimals, sometimes it happens that a Cypher or Cyphers must be placed to the Left Hand of the Decimal, to supply the Defect or Want of Places in the Quotient of Division, or in the Product of Multiplication of Decimals.——In this Case always remember, That so many Cyphers as you annex to the Denominator of the Vulgar Fraction, so many Places you must point off in the Quotient towards the Left-hand; but if there be not so many Places to point off, then you must supply the Defect by placing o to the Left of the Decimal.

Example 2.

Reduce 9d. or $\frac{9}{240}$ to the Decimal of a Pound Sterling, thus:

G 5   24|0

2 4|0)9000,0(,0375

72 ..
———
180
168
———
120
120
———
(0)

Here is but three Places in the Quotient, *viz.* 375 ; and therefore I cannot point off 4 for the four Cyphers annexed to 9 ; wherefore I prefix o to the Left of the Quotient 375, thus ,0375, and then it is the Decimal of 375 ten thousandths Parts of an Integer in the Work.

The more Cyphers you annex, the nearer you bring your Decimal to the Truth : But in most Cases, four Cyphers annexed is sufficient. But when you are to reduce ⅓, ⅓, or ¾ (as above) of an Integer to a Decimal, or any Number of Shillings to the Decimal of a Pound, two Cyphers are sufficient. One Example more.   *Example* 3.

Reduce 3 Farthings to the Decimal of a Pound, that is, ³⁄₉₆₀ vulgarly, 960 Farthings being a Pound, and therefore so expressed, and with the same Reason as 9 Pence before, 240 Pence being a Pound.

96|0) 30000|0 (,003125. The Work being perform'd according to the Division, with two Cyphers prefix'd, quotes, ,003125, or 3125 Millionth Parts of a Pound—by the same Method, the Vulgar Fraction of Weight, Measure, &c. are reduced to Decimals.

Example 4.

How is 12 Pounds Weight expressed in the Decimal of 1 C. Weight *Avoirdupois*, or 112*lb.* the Vulgar Fraction is ¹²⁄₁₁₂, and the Decimal, 1071, found as before, thus,

112) 120000(,1071

112

&c.

The Remainder 48 is not worth Notice, being less than the 10000th Part of an Unit, or 1.

Example 5.

How is 73 Days brought to the Decimal of a Year vulgarly thus expressed ⁷³⁄₃₆₅.

                                                      36,5
365) 730 (,2 *Anf.* 2 Tenths. *Thus proved,*   36,5
730 .   ———
———   73
0.

Here 365, the Days in a Year, is divided by 10 twice, and the Quotients added together, and they make 73 Days,

Valuation

Valuation of Decimals.

TO find the Value of a Decimal Fraction, whether of Coin, Weight, Measure, &c.

Rule. Multiply the Decimal given by the Units contained in one of the next inferior Denomination, and point off as many Places from the Right-hand, as you have in your Decimal; so those Figures toward the Left of those pointed off, are Integers or whole Numbers; and those on the other Side toward the Right-hand are Parts of 1 or Unity; that is, so many Tenths, Hundredths, Thousandths, or Ten Thousandths of one of those Intergers, whether a Pound, a Shilling, or a Penny, &c. or of a Ton, a Hundred, a Quarter, or a Pound Weight, &c. and so of any other Integer, of what Kind or Quality soever.

Examples.

,476 Parts of a Pound Sterling.
20 Shillings a Pound.
————
9,520
12 Pence 1 Shilling.
————

Answer. 6,240
9s. 6d. 960. 4 Farthings 1 Penny.
Parts or ¼ ————
of 1d. ,960 Parts of 1l. or almost ¼ of 1d.
————

,476 Parts of a Ton wt.
20 C. 1 Ton.
————
9,520
4 qrs. 1 C.
————
2,080
28l. 1 qr. of a C.
Answer. ————
9 C. 2 qrs. 2 lb. 240 Parts. 2,240

In the Example of Money, I multiply the Fraction by 20, and point off 520 for the three Places in the Decimal, &c. and the Answer is 9s. 6d. ¼.

In the Example of Weight, I proceed as in that of Money (the Fraction being the same) but with different Respect to

to the inferior Denominations; and the Answer is 9 C. 2 qrs. 2 lb. $\frac{240}{1000}$ of a Pound Weight.

To find the Value of a Decimal in Money in a briefer Method, viz.

Rule. Always account the Double of the first Figure (to the Left-hand) for Shillings; and if the next to it is 5, reckon 1s. and whatever is above 5, call every One Ten, and the next Figure so many Ones as it contains, which Tens and Ones call Farthings; and for every 25, abate one: As admit the last Example of Money, viz. 476 the Double of 4 is 8; and there being one five in 7, (the next Figure) I reckon 1s. more, which makes 9s. and there being 2 in 7 above 5, they are to be accounted two Tens or 20; which with the next Figure 6 being so many Ones, makes 26 Farthings; and abating 1 for 24, give 6d. and almost a Farthing more, for the Fraction 960 Thousandths of a Pound wants but 40 of a Farthing.

Addition of Decimals.

IS the same in Practice as in whole Numbers, only in setting down. Care must be taken that the Decimal Parts stand respectively under their Parts; that is, Primes under Primes, Seconds under Seconds, Thirds under Thirds, &c. and the Integers stand as in whole Numbers.

Example.

Integers	Primes Seconds Thirds	Parts	Primes Seconds Thirds Fourths Fifths
2 4 6	,4 2 6 —	,4 7 9 6	,4 7 9 6 2
7 4	,4 2	,4 2	,0 6 4 2
9	,0 6	,0 7 6	,0 0 6
6 5	,7 9 4	,0 0 0 4	,7
4 2	,0 0 5	,5	,9
4 3 7	,7 0 5	1 ,4 7 6 0	2,1 4 9 8 2

Note, *There must be as many Places pointed off, as there are in the biggest Number.*

The casting up of the foregoing Examples is the same with Addition of one Denomination in whole Numbers: The Total of the first (supposing them Pounds Sterling) is 437l. and ,705 Parts. The second is 1l. and ,4760 Parts. And the third is 2l. and ,14982 Parts.

Subtrac-

Subſtraction of Decimals.

THE Numbers muſt be placed as before in *Addition*, and then proceed as in *Subſtraction of one Denomination of Numbers.*

Examples.

l. pts.	l. pts.	l. pts.
46,51	140,42	4762,0
9,24	91,7462	0,472
37,27	48,6738	4761,528

Multiplication of Decimals.

HERE the placing the Numbers and Operation is the very ſame as in whole Numbers; and only remember to point off towards the Right Hand ſo many Places for Decimals as you have Decimal Places in both *Multiplicand* and *Multiplier.*

Examples.

(1)	(2)	(3)
24,6	4602	,2796
2,5	,075	26
1230	23010	16776
492	32214	5592
61,50	345,150	7,2696

(4)	(5)	(6)
,07214	,083	4,25
,006	,16	1,09
,00043284	498	3825
	083	425
	,01328	4,6325

Note, That where there are not a competent Number of Figures, or Places to point off, ſuch Defect is ſupplied with Cyphers to the Left-hand; as in the 4th and 5th Examples, according to what was before hinted in reducing a Vulgar Fraction to a Decimal.

Division

Diviſion of Decimals.

IS the ſame in Operation as in whole Numbers. The only
Difficulty is to know how many Decimal Places to point
off towards the Left-hand of the Quotient; to which End,
remember this Rule; Obſerve how many Decimal Places
there are both in the Diviſor and Dividend, and note the
Difference; and whatſoever it is, ſo many Places muſt be
pointed off to the Right-hand of the Quotient.

Examples.

Divide 12,345670 by 6,789) 12,345670(1,818
6789···

In this Example, the Dividend
hath three Decimal Places more
than the Diviſor, wherefore I
point of three Places to the Right-
hand of the Quotient, *viz.* 818;
ſo the Quotient is 1 Integer, and
,818 Parts.

55566
54312
───
12547
6789
───
57580
54312
───
(3268)

Divide 3, 46000 by 1,23) 3,46000 (2,813
246···

Here the Difference between
the Diviſor and Dividend is
three Places; as in the forego-
ing Example; therefore ,813
is pointed off for the Decimal
Fraction; and the Quotient is
2 Intergers, and ,813 Thou-
ſandths of an Integer, or 1.

1000
984
───
160
123
───
370
369
───
(1)

Thus much for Fractions Vulgar and Decimal; wherein
I have been as conciſe as poſſible, and worked with as much
Plainneſs as I could invent.

BOOK-KEEPING.

THE next Qualification to fit a Man for Bufinefs, after *Arithmetick*, is the Art of *Book-keeping*, or *Merchants Accompts*, after the *Italian* Manner, by Way of Double Entry.

It is not without good Reafon that moft People of Bufinefs and Ingenuity, are defirous to be Mafters of this Art: for if we confider the Satisfaction that naturally arifeth from an Account well kept; the Pleafure that accrues to a Perfon by feeing what he gains by each Species of Goods he deals in, and his whole Profit by a Year's Trade; and thereby alfo to know the true State of his Affairs and Circumftances; fo that he may, according to Difcretion, retrench or enlarge his Expences, &c. as he fhall think fit.

This Art of *Book-Keeping*, or *Merchants Accompts*, is talked of by many, but truly underftood but by very few: For every petty School-mafter in any By-Corner, will be fure to have *Merchants Accompts* expreffed on his Sign, as a principal Article of his Ability, in Teaching; though, ftrictly fpeaking, for want of the Practical Part, knows hardly any Thing of the Matter, and confequently incapable of teaching it.

Inftructions, Notes, Rules, and Directions for the right ordering and keeping *Merchants Accompts*, by the excellent Order of Charge and Difcharge, commonly called *Debtor* and *Creditor*.

Of the Books in Ufe.

THE Books of principal Ufe, are the *Wafte-Book*, (or by fome called the *Memorial*) *Journal*, and *Ledger*.

Wafte-Book.

IN this Book muft be daily written whatever occurs in the way of Trade; as Buying, Selling, Receiving, Delivering, Bargaining, Shipping, &c. without Omiffion of any one Thing, either bought or fold, &c. as Money lent, or received at Intereft. But not Money received or paid for Goods fold or bought at Times; for that will come of courfe, and muft be entred into the *Cafh-Book*, from whence it is pofted into the *Ledger*.

The *Wafte-Book* is ruled with one Marginal Line, and three Lines for Pounds, Shillings, and Pence, and the Day

of the Month, and Year of our Lord, is inserted in the Middle of the Page. In this Book any one may write, and, on Occasion, any Thing may be blotted out, if not well entered, or any Error be made.

JOURNAL.

INTO this Book every Thing is posted out of the *Waste Book*, but in other Terms, in a better Stile, and in a fairer Hand, without any Alteration of Cyphers or Figures; and every Parcel, one after another, promiscuously set without Intermission, to make the Book, or several Entries of it, of more Credit and Validity, in case of any Law Dispute, or any other Controversy that may happen between Merchant and Merchant. In this Book you are to distinguish the Debtor and Creditor (or in quainter Terms, the *Debit* and *Credit*.) And to this Book you must have Recourse for the Particulars of an Accompt, which in the Leidger are entered in Gross, that is, in one Line. In this Book also, the Day of the Month must be placed in the middle of the Page; and is ruled with double marginal Lines, for References to the Leidger; and with three Lines for *l. s. d.* as the Waste-Book.

Of the Leidger.

FROM the *Journal* or *Day-Book* (as derived from the *French*) all Matters or Things are posted into the *Leidger*, which by the *Spaniards* are called *El Libro Grande*, as being the biggest Book, or Chief of Accompts. The Left-hand Side of this Book is the *Debtor*, and the Right the *Creditor*; and the *Numbers* and *Folios* of each Side must be alike as 45 *Debtor*, and also 45 *Creditor*. The Day of the Month (in this Book) by most is set in a narrow Column on the Left-hand, and the Month on the Left of that; But where I kept Books, the Number in the narrow Column referred to the Journal Page, and the Month and Day was placed in the broad Column, to the Right of that; and at the Head of each Folio is the Name of the Place of Residence, and the Year of our Lord; as thus:

London, Anno———————————1770.

But the Examples of the several Books hereafter following, will make the foregoing Hints of them much more intelligible.—And as I am upon the Doctrine of Book-keeping, I'll take this as an universal Text (for so it is) *viz.*

All Things Received, or the Receiver, are Debtors to the Delivered, or the Deliverer.

		l.	s.	d.
Wafte-Book Entry. London, *January* 1, 1770. Bought of *William Wilkins*, of *Norton-Falgate*, 120 Yards of white Sarce-net, at 2s. 3d. *per* Yard, to pay in two Months.— — — —		13	10	—
The Journal Entry of the fame. 1/2 Wrought Silk, Debtor to *William Wil-kins*, l. 13—10 for 120 Yards of white Sarcenet, at 2s. 3d. *per* Yard, to pay in two Months.— — —		13	10	—
In this Example, the Account of wrought Silks is the Receiver, and therefore Debtor to W. Wilkins, *the Deliverer.*				
Again. *Wafte-Entry Book.* *January* 4. Sold *Henry Harrington* 246 lb. nett of Indico Lahore, at 6s. 6d. *per* lb. to pay in 3 Months.		79	19	—
Journal Entry. 3/4 *Henry Harrington* Dr. to Indico, for 246 lb. nett, at 6s. 6d. *per* lb. to pay in 3 Months.		79	19	—
Once more. *Wafte-Book Entry.* Bought of *George Goodinch*, Sen. *viz.* Chefe. Cheefe 430 C.½, at 23s. 4d. *per* C. } l. 502—5 Butter 50Firkins, qt.nett 2800lb. at 3d. *per* lb. } 35—0 to pay in 6 Months. }		537	05	—
Journal Entry. 5/4 Sundry Accounts Dr. to *Geo.Goodinch*, l. 537—05 ———viz. Cheefe of *Chefhire*, for 430 C.½ 23s. 4d. *per* C. } l. 502—5 5/— Butter for 50 Firkins, qt. nett 2800lb, at 3d. *per* lb. } 35—0		537	05	—

Wafte-

		l.	*s.*	*d.*
Waste-Book.				
Sold *James Jenkins*, viz.				
White Sarcenet 50 Yards, at 3*s. per* Yard	7 10 0			
Indico Lahore 50 Pounds, at 7*s. per* Pound	17 10 0			
		25	—	—

	Journal Entry of the last.			
6	*James Jenkins* Debtor to sundry Accounts, *viz.*			
7	To white Sarcenet 50 Yards, at 3*s. per* Yard 7 10 0			
8	To Indico Lahore for 50 *lb.* at 7*s. per lb.* 17 10 0			
		25	—	—

From these few Examples of Entry, it may be observed, that an experienced Person in Accompts, and a good Writer, may keep a *Journal* without a *Waste-Book*, or a *Waste-Book* without a *Journal*, since they both import one and the same Thing, though they differ a little in Words, or expressing; for the Leaves of both are numbered by Pages, or Parcels, as some do.

But however, I shall give Methods of keeping each as far as Room will give me Leave.

(1)

The Waste-Book.

London, *January* 1 ———————1768.

An Inventory of all my Effects of Money, Goods, and Debts, belonging to me A. B. *of* London, *Merchant, viz.*

In Cash for trading Occasions	3500,—,—			
In Tobacco 4726 *lb.* at 9*d. per lb.*	177, 4, 6			
In Broadcloth 6 Pieces at 50*s. per* Piece—	15, —,—			
Dowlas 1000 Ells, at 2*s.* 4*d. per* Ell—	116, 13, 4,			
Canary Wines 9 Pipes at 20*l. per* Pipe—	270,—,—			
Due to me from *Henry* *Bland, per* Bond—	60;—,—			
		4138	17	10

(1)

Journal.		*l.*	*s.*	*d.*
Inventory, &c. as above.				
Sundry Accts. Dr. to Stock—	4138,17,10			
viz.				
1 Caſh for trading Occaſions	3500,—,—			
1 Tobaccoes 4726 *l.* at 9*d.* per lb.	177, 4, 6			
1 Broadcloths, 6 Pieces at 50*s.* per Piece	15,—,—			
1 Dowlas 1000 Ells, at 2*s.* 4*d.* per Ell.	116, 13,4			
1 Canary Wine 9 Pipes, at 30 *l.* per Pipe	270,—,—			
3 *Henry Bland* due on Bond	60,—,—			
		4138	17	10

I ſhall make one Page ſerve for Waſte-Book and Journal Entries, to ſave Room, and alſo to have both Methods of Entry under Eye, to make them more intelligibly uſeful to the Reader, he hereby being not obliged to turn over Leaf to ſee their Difference of Entry.

1   *Waſte-Book.*

London, *January* 1.——— 1768.		*l.*	*s.*	*d.*
Owing to *William Webb*, by Note of my Hand —	50—			
Ditto to *Roger Ruff*, to Balance of his Account —	16 12 4			
Ditto to *Henry Horn*, due the 4th of *May* next ——	62—			
		128	12	4
Journal.				
1 Stock Debtor to ſundry Accounts, *l.* 128—12—4 —— *viz.*				
3 To *William Webb*, by Note of my Hand ——	50—			
4 To *Roger Ruff* for Balance of his Account ——	16 12 4			
5 To *Henry Horn*, due the 4th of *May* next ———	62—			
		128	12	4

Waste-Book.

London, Feb. 2d ———————— 1768.		*l.*	*s.*	*d.*
Sold *Thomas Townfend, viz.* 246 *lb.* of *Virginia* Cut Tobacco, at 14*d. per lb.* } 14 07—				
460 Ells of Dowlas, at 3 *s. per* Ell ——— ——— } 69 — —				
		83	07	—

Feb. 2.
Journal.

6	*Thomas Townfend,* Debtor to Sundries, *viz.*				
—					
1	To Tobacco, for 246 *lb.* at 14*d. per lb* } 14 07—				
1	To Dowlas, for 460 Ells, at 3*s. per* Ell. ——— ——— } 69 — —				
			83	07	—

Waste-Book.
Ditto 24*th.*

Bought of *Leonard Legg,* 4 Pipes of Canary, at 28*l. per* Pipe ————— To pay in 6 Months.		112	—	—

Ditto 24*th.*
Journal.

1	Canary Wine, Debtor to *Leonard Legg,* for 4 Pipes, at 28*l. per* Pipe ————	112	—	—
2	To pay in 6 Months.			

The fhort Lines ruled againft the Journal Entries are, or may be, termed Pofting Lines, and the Figure on Top of the Lines denotes the Folio of the Ledger where the Debtor is entered; and the Figure under the Line fhews the Folio of the Ledger where the Credit is entered; and the other fmaller Figures againft the fundry Debtors, or fundry Creditors (whether Goods or Perfons) fhew alfo in what Folios of the Ledger they are pofted. And the Figures in the narrow Column towards the Left-hand of the Pounds, Shillings, and Pence Lines, direct to the Folio in the Ledger where the Debit or Credit is pofted, that is, to the

Accompt

Accompt of Goods, or of the Person immediately following the Words *To* or *By*; the first being proper to the Left or Debit Side of the Ledger; and the other used always on the Right or Credit Side of the Folios in the Ledger.

There are several other Books used by Merchants besides those three before-mentioned; as the *Cash-Book*, which is ruled as the Ledger, and folio'd likewise, wherein all Receipts of Money are entered on the Left-hand Folio, and Payments on the Right; specifying in every Entry the Day of the Month (the Year being set on the Top) for what, and for whose Account the Money was received, or paid; and the Total Debit or Credit of each Side is to be posted into the Ledger, to the Account of Cash therein, in one Line of either Side, *viz.* to or by sundry Accompts, as *per* Cash-Book, Folio, &c. which is to be done once a Month, or at Discretion; and the Particulars of each Side, Article by Article, are to be posted into the Ledger to the proper Accompts unto which they belong; with References in the Cash-Book to the several Folios in the Ledger; and carry the Balance over Leaf in the Cash-Book; by which you may know at any time what Cash you have, or ought to have, by you.

Another Book, is a Book of Charges of Merchandize, wherein is to be entered the Custom and petty Charges of any shipp'd Goods; as Porterage, Wharfage, Warehouse-room, &c. and once a Month is transferred into the Cash-Book on the Credit Side, making Reference to the Book of Charges of Merchandize; and likewise the same in the Debtor Side of the same Accompt in the Ledger for the Particulars thereof.

The next Book I shall name, is the Invoice Book, or Book of Factories: In this Book is to be copied all Invoices or Cargaisons of Goods shipped, either for Accompts proper or partable; and also of Goods received from Abroad, which must always be entered on the Left-side, leaving the Right-side Blank; and on the Advice of the Disposal of Goods sent Abroad, and also on the Sale of Goods receiv'd from Abroad, enter them on the Blank or Right-side; so that at first View may be seen how the Accompt stands, &c.

The next a Bill-Book, wherein is enter'd Bills of Exchange accepted, and when they become due; and when paid, made so in the Margin.

The

The next is a Book of Houshold Expences, for the Monthly Charge spent in House keeping; likewise Apparel, House-rent, Servants Wages, and Pocket Expences; and this may be monthly summed up, and carried to the Credit of Cash.

Besides the above mentioned, there must be a Book to copy all Letters sent abroad, or beyond the Seas; wherein the Name of the Person or Persons to whom the Letter is sent, must be written pretty full, for the readier finding the same.

The next is (and what is very necessary) a Receipt Book, wherein is given Receipts for Money paid, and expressed for whose Accompt or Use, or for what it is received; to which the receiving Person must set his Name for himself, or some other, with the Year and Day of the Month on the Top.

Lastly, A note or memorandum Book, to minute down Affairs that occur, for the better Help of Memory; and is of great Use where there is Multiplicity of Business.

Having given an Account of the several Books, and their Use, the next Thing necessary will be, to give some few Rules of Aid to enable the Book keeper to make proper Entries; and to distinguish the several Debtors and Creditors, *viz.*

First, For Money received make Cash Dr. to the Party that paid it (if for his own Account) and the Party Cr.

Secondly, Money paid make the Receiver Dr. (if for his own Account) and Cash Cr.

Thirdly, Goods bought for ready Money, make the Goods Dr. to Cash, and Cash Cr. by the Goods.

Fourthly, Goods sold for ready Money, just the contrary, *i. e.* Cash Dr. and the Goods Cr.

Fifthly, Goods bought at Time; Goods bought are Dr. to the Seller of them, and the Seller Cr. by the Goods.

Sixthly, Goods sold at Time: just the contrary, *i. e.* the Party that bought them is Dr. to the Goods, and the Goods Cr. by the Party.

Seventhly, Goods bought Part for ready Money, and the rest at Time. First, make the Goods Dr. to the Party for the Whole. Secondly, make the Party Dr. to Cash for the Money paid him in Part of those Goods.

Eighthly, Goods sold, Part for ready Money, and the rest at Time. First, make the Party Dr. to the Goods for the Whole. Secondly, Cash Dr. to the Party received of him in Part of those Goods.————Or either of these two last
Rules

Rules may be made Dr. to Sundries; as Goods bought, Dr. to the felling Man for fo much as is left unpaid, and to Cafh for fo much paid in ready Money. And fo on the contrary for Goods fold.

Ninthly, When you pay Money before it is due, and are to have Difcount allowed you, make the Perfon Dr. to Cafh for fo much as you pay him, and to Profit and Lofs for the Difcount ; or make the receiving Man Dr. to Sundries as before:

Profit and Lofs is Dr.

To Cafh for what Money you pay and have nothing for it, as Difcount of Money paid you before due, and to Abatement by Compofition, Houfhold Expences, &c.

Per Contra, Cr.

By Cafh for all you receive, and deliver nothing for it ; as Difcount for prompt Payment, any Legacy left you, Money received with an Apprentice, and by the Profit of every particular Commodity you deal in, by Ships, in Company, by Voyages, &c.

To balance or clear an Account when full written.

1. FIRST, if the Dr. Side be more than the Credit, make the Old Accompt Cr. by the New ; and if the contrary, make the new Accompt Dr. to the Old : but if the Debtor Side be lefs than the Credit, then make the old Accompt Dr. to the New, and the new Accompt Cr. by the Old, for fuch a Reft or Sum as you fhall find in the Accompt.

2. An Accompt of Company, wherein you have placed more received of another than his Stock ; then add as much on the Debit Side as you find on the Credit Side ; to the End that, in the new Accompt, you may have fo much Debit as you put in, and fo much Credit as you have received.

3. In Accompts of Merchandize, you muft enter the Gain, or Lofs, before you make the old Accompt Cr. by the New, and the New Dr. to the Old, for, the Remainder of Goods unfold.

4. In the Foreign Accompts, which you are to keep with a double Margin, or Column, for Dollars, for Crowns, or any Foreign Coins whatfoever, which have been received or paid by Bills of Exchange for Goods fold by Factors or Cor-

ſrespondents, or bought by them for the Accompts before; here you muſt firſt balance the ſaid inward Margin of Dollars, Crowns, *&c.*

To remove an Account full written to another Folio.

Sum or add up, the Dr. and Cr. Sides, and ſee the Difference, which place to its oppoſite ; as, admit the Cr. Side exceeds the Dr. then you are to write the Line in the Old Accompt to balance on the Dr. Side, to anſwer the Line on the Cr. Side of the New Accompt.

How to balance at the Year's End, and thereby to know the State of your Affairs and Circumſtances.

YOU muſt make Accompt of Balance on the next void Leaf or Folio of your Ledger to your other Accompts; but after ſo done, do not venture to draw out the Accompt of Balance in the ſaid Folio, till you have made it exact on a Sheet of Paper, ruled, and titled for that Purpoſe ; becauſe of Miſtakes or Errors that may occur or happen in the Courſe of balancing your Ledger ; which are to be rectified, and will cauſe Eraſements or Alterations in that Accompt, which ought to be very fair and exact : and after you have made it to bear in the ſaid Sheet, copy fair the ſaid Accompt of Balance in the Ledger.

The Rules for Balancing are theſe, *viz.*

1ſt, Even your Accompt of Caſh, and bear the Nett Reſt to balance Dr.

2dly, Caſt up all your Goods bought, and thoſe ſold, what kind ſoever, in each Accompt of Goods ; and ſee whether all Goods bought, be ſold or not ; and if any remain unſold, value them as they coſt you, or according to the preſent Market Price, ready Money ; and bear the Nett Reſt to balance Dr.

3dly, See what your Goods or Wares ſeverally coſt, and alſo how much they were ſold for, and bear the Nett Gain or Loſs to the Account of Profit and Loſs.

4thly, Even all your Drs. and all your Crs. in order as they lie, and bear the Nett Reſt of every Dr. and Cr. to Balance.

5thly, Even your Voyages, your Factors Accompts, wherein is either Gain or Loſs, and bear the Nett Gain or Loſs to the Accompt of Profit and Loſs, and the Goods unſold to Balance.

6thly,

6thly, Even the Accompt of Profit and Loſs, and bear the Nett Reſt to Stock or Capital, as an Advance to your Stock or Capital.

7thly, Even your Stock, and bear the Nett Reſt to balance Cr.

Then caſt up the Dr. and Cr. Sides of your Balance; and if they come out both alike, then are your Accompts well kept; otherwiſe you muſt find out your Error by pricking over your Books again, to ſee whether you have entered every Dr. and Cr. in the Ledger as you ought.

Note, *By pricking over the Book is meant, an Examining every Article of the Journal, against the Ledger, and marking it thus,— or thus* † *; and upon the ſecond Examination thus* ‡ *; and upon a third Examination thus* || *; or any other Mark.*

Note alſo, *in all Accompts of Goods, you muſt keep a Column in the middle of the Leaf, of each Side, for Number, Weight or Meaſure.*

And alſo Note, *That the Money, Wares, or Goods remaining in your Hands, and the Debts owing to you, muſt ever balance with the nett Stock and Debts owing by you.*

Though all that hath been ſaid in relation to Book-keeping, and the ſeveral Rules thereunto belonging, may ſeem a little abſtruſe to the altogether Unlearned therein, yet there is no ſuch mighty Difficulty to inſtruct them as they may imagine; for theſe following Hints may render what hath been already ſaid intelligible to an ordinary Capacity.

1ſt, Stick cloſe to the Text, or general Rule beforementioned, *viz.* That all Things received, or the Receiver, are Debtor to all Things delivered, or the Deliverer; for this Rule holds good in all Caſes.

2dly, When the Dr. (whether Perſon or Goods) is known, the Cr. is eaſily underſtood, without mentioning it: For if *A* be Dr. to *B*, then *B* is Cr. by *A*, for what Sum ſoever it be; alſo, if Goods be Dr. to *C*. then *C* is Cr. by thoſe Goods for the Sum they amount to——This I mention, becauſe that moſt Authors (if not all) that I have met with on the Subject of Book keeping, ſpend a great many Words, which I think (begging their Pardon if I err) might be ſaved, in declaring the Creditor, as well as ſhewing the Debtor, when it may be underſtood, as aforeſaid.

3dly, This Art of *Italian* Book-keeping, is called *Bookkeeping by double Entry*, becauſe there muſt be two Entries;

the

the firſt being a Charging of a Perſon, Money, or Goods; and the ſecond a Diſcharging of a Perſon, Money or Goods.

4thly, *Strictly note*, That if the firſt Entry be on the Dr. or Left-hand Side of your Ledger; the next or ſecond Entry, muſt always be made on the Right or Credit Side of your Ledger; for when ever one Perſon or Thing is charged, then always another Perſon or Thing is diſcharged for the Sum, let it be what it will.

And ſo it is in balancing or evening an Accompt, and carrying it to another Folio; for if the old Accompt be even-ed by Balance on the Credit Side, then the new Accompt muſt be debited or charged on the Debit Side, for the Sum that balanced the old Accompt.

Much more might be ſaid on this *Art of Book-keeping*, if I had Room; but I have plainly ſpoke to the principal Fundamentals thereof, which I hope may be ſufficient for the Inſtruction and Improvement of any intelligent Reader.

The next Matter I ſhall go upon, is to ſhew, or give Examples of various Kinds of Receipts and promiſſary Notes; alſo Bills of Parcels in different Trades; likewiſe Bills of Book-Debts, Bills of Exchange, with Remarks on them; and ſome other Precedents of Writings in Trade and mercantile Affairs.

And firſt of Receipts of different Forms

l.   s.   d.

Received, *September* 23, 1768, of Mr. *Anthony Archer*, the Sum of Six Pounds, Nine Shillings, on Account for my Maſter *Bryan Murray, per me*
         Caleb Catchmoney.

6—09—00

London, September 23, 1768.
Received of Mr. *Kendrick Keeptouch,* Ten Pounds Eleven Shillings and Six-pence, in full, *per me*
         Henry Haſty.

10—11—06

Note, *the Sum received muſt always be expreſſed in Words at Length, and not in Figures, in the Body of a Receipt; but it may and ought to be expreſſed in Figures behind a Brace (as in the two foregoing Examples, or under the Left-hand Part of the Receipt, as in the following) as well as in the Body of the Receipt.*

When

When a Receipt is given in a Book, there is no Occasion to mention the Man's Name of whom you receive the Money; because that is implied, he being the Owner of the Book.

A Receipt in Part of Goods sold.

REceived the 24th of *September*, 1768, of Mr. *Timothy Trustlittle*, Fifty Pounds, in Part of *Indico* sold him the 22d Instant, *per me.* *Lawrence Lovemoney.*

£.50—00—0

A Receipt given in a Receipt Book.

REceived the 26th of *September*, 1768, the Sum of Forty-five Pounds, by the Order, and for the Accompt of *George Greedy*, Esq; *per* *Timothy Trusty.*

£.45—0—0

REceived the 27th of *September*, 1768, of Mr. *Daniel Davenport*, and Company, One Hundred Pounds, on Accompt of Self and Partner, *per* *James Jenkins.*

£.100—0—0

REceived of Mr. *Timothy Tennant*, this 25th Day of *October*, 1768, Six Pounds, for a Quarter's Rent due at *Michaelmas* last, for my Master *Lancelot Letfarm*, *per me.*

£.6—0—0 *Francis Faithful.*

REceived *August* 14, 1769, of Mr. *Peter Bishop*, Twenty-nine Pounds, Six Shillings, in Part of a Bill of Sixty Pounds, due the 3d of *October* next, to Mr. *Sampson Shuffle. per* *Francis Fidal.*

£.29—6—0

A Receipt on the Back of a Bill of Exchange.

SEptember 30th, 1768, received the full Contents of the within mentioned, being 500 Pieces of Eight, *per* *Nathaniel Needy.*

Promissary Notes.

I Promise to pay Mr. *Timothy Teazer*, Sixty Pounds, on the 20th of this Instant *September*, witness my Hand this 15th of *September, Anno* 1768.

Daniel Dilatory.

£.60—00—00

I Promise to pay to Mr. *Christopher Cash*, or his Order, five Pounds for Value received; witness my Hand this 26th Day of *October*, 1768.

Robin Ruck.

£. 5—00—00

A Note given by Two.

WE, or either of us, promise to pay to Mr. *Matthew Mistrust*, or his Order, Six Pounds Sterling, on Demand, for Value received : Witness our Hands this 27th of *September*, 1769.

£.6—00—00	*Nathan Needy.*
	Samuel Surety.

Witness, Nicholas Notice.

A Bill of Debt.

MEmorandum, That I *William Want*, of *London*, Weaver, do owe and am indebted unto Mr. *Timothy Trust*, of *Westminster*, Watchmaker, the Sum of Twenty-five Pounds Six Shillings, of lawful Money of *Great-Britain*; which Sum I promise to pay the said *Timothy Trust*, his Executors, Administrators, or Assigns, on or before the 10th Day of *December* next ensuing. Witness my Hand this 22d Day of *October*, 1769.   *William Want.*

Witness, Titus Testis.

A Bill of Parcels.

IT is usual when Goods are sold, for the Seller to deliver to the Buyer, with the Goods, a Bill of Parcels ; which is a Note of their Contents and Prices, with a Total of their Value cast up, &c.—These Bills ought to be handsomely writ, and in methodical Order, according to the best and customary Way of each particular Trade.

I shall therefore shew the Forms or Bills of Parcels in some Trades and Professions, with the shortest Methods of casting up the several Articles in each Bill.

A Mercer's Bill.

London, December 26, 1768.

Bought of *Abel Atlas*, and *Ben. Burdett*, viz.

12 Yds. ¾ of rich flowered Sattin, at 12s. 6d. per Yd.
8 Yds. of sprigg'd Tabby, at 6s. 3d. per Yd.
5 Yds. ¼ of Farrindon, at 6s. 8d. per Yd.
6 Yds. of Mohair, at 4s. 2d. per Yd.
17 Yds. ½ of Lutestring, at 3s. 4d. per Yd.

                                16—7—8

Sometimes the Money is paid presently, then the Receipt is made as follows.

                                        Received

REceived the 26th of *September*, 1768, Sixteen Pounds, feven Shillings, and eight Pence, in full of this Bill, for my Maſter *Abel Atlas*, and Company, *per me*

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Franᴄis Fairſpoken.

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A Wollen Draper's Bill.

London, September 24, 1768.

Bought of *Benjamin Broadcloth*, 22d of *September*, 1768, viz.

	s. d.	
7 Yards of fine Spaniſh Black, at	18—4	*per* Yd.
5 Yds. ½ of Ditto, at	12—4	ditto.
6 Yds. ¾ of fine mixt Cloth, at	15—9	ditto.
16 Yds. ¾ of Frize, at	3—6	ditto.
4 Yds. of Drap-de-berry, at	13—5	ditto.
5 Yds. ⅞ of ſuperfine *Spaniſh* Cloth, at	18—10	ditto.

A Linen Draper's Bill.

September 26, 1768.

Bought of *Marmaduke Muſlin*, viz.

16 Ells of Dowlas, at 1s. 4d. *per* Ell.
14 Ells of Lookram, at 1s. 3d. *per* Ell.
22 Ells ½ of Holland, at 3s. 4d. *per* Ell.
1 Piece of Cambrick, at 15s.
85 Yards ½ of Diaper, at 1s. 10d. *per* Yd.
19 Yds. ¾ of Damaſk, at 4s. 3d. *per* Yd.
2 Pieces of Muſlin, at 18s. 10d. *per* Piece.

The ſeveral Articles of theſe Bills are purpoſely omitted being caſt up, for the Exerciſe of the Reader in the Rules for *Practice* ; or by the Rules of *Multiplication of Money*, before ſhewn ; which indeed is the beſt Method of all, for the ready caſting up the divers and ſundry Articles contained in any Bill of Parcels whatſoever.

Example.

We'll take the laſt Article of the Wollen-Draper's Bill, viz. 5 Yds. ⅞, *&c.* at 18s. 10d. *per* Yard.

5⅞		18—10
		7
l. 4—14—2		8) 131—10
16—5¾		
Facit l. 5—10—7¾		16—5¾

In this Example the Price is multiplied by the Quantity, viz. 5 Yards ⅞, according to the Rules delivered in *Mul-*

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tiplication

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tiplication of Money; and the Product by 5 is *l.* 4—14—2. Then for the $\frac{7}{8}$ of a Yard, I multiply the Price of the Integer, *viz.* 18s. 10d. by the Numerator of the Fraction, *viz.* 7, and divide by the Denominator 8, and the Quotient is 16s. 5d. $\frac{3}{4}$ agreeable with the Rule spoke to in the Doctrine of Fractions.——Which 16s. 5d. $\frac{3}{4}$, added to the Product of 18s. 10d. multiplied by 5, gives *l.* 5—10—$7\frac{3}{4}$, as in the Operation above.

A Grocer's Bill.

Bought of *Robert Raisin*, and *Peter Plumb*, October the 4th, 1768, *viz.*

	C. qrs. lb.		l. s. d.	
Sugar 2 Hhds. qt. —	17—2—17	at	1—10—6	*per C.*
Raisins 3 Barrels —	6—1—19	at	1—14—5	
Tobacco 1 Hhd. —	4—0—12	at	4—19—4	
Rice 1 Barrel ——	1—0—15	at	2—16—4	
Pepper 1 Bag ——	1—3—19	at	3—12—4	
Brimstone —— ——	2—1—19	at	1—19—1	

A Hosier's Bill.

Bought of *Silvester Slipstocking*, October 5th, 1768, *viz.*

5 Pair of Womens mixt Worsted Hose, at —	5s. 7d.
3 Pair of Womens Silk Hose, at —— ——	9s. 4d.
22 Pair of Men's Wollen ditto, at —— ——	3s. 2d.
8 Pair Women's ditto, at — —— ——	2s. 2d.
21 Yards of Flannel, at ——	1s. 11d.
8 Pair of Thread Hose, at ——	3s. 4d.

The best and most expeditious Way of casting up these several Articles is by the Method shewn in *Multiplication of Money*.

A Fishmonger's Bill.

Bought of *Leonard Ling*, 6th of October, 1768.

3 C. of Haberdine, at ——	*l.* 7—10—6 *per C.*
1 $\frac{1}{2}$ of Ling, at —— ——	8—12—6
1 $\frac{1}{2}$ of Stock-Fish, at ——	4—10—6
6 $\frac{1}{2}$ Barrels of White Herrings, —	3—10—2
1 Barrel of red Herrings, at —	2—12—6
95 dried Salmon, at ——	0—10—2

The Amount of each Article is purposely omitted for the young Man's Exercise in *Arithmetick*.

Note, *Haberdine or Ling*, 124 is a Hundred: *Of Stock fish and Herrings*, 120 to the Hundred, 1200 to a Thousand, and 12 Barrels a Last.

A Leather-

A Leather-ſeller's Bill.

Bought of *Henry Hide*, the 7th of *October*, 1768, *viz.*

	s. d.	l.
15 Large oil'd Lamb Skins, at ——	1—3 ½	*per* Skin.
13 Kipp of Goat Skins, ——	3—4	
137 Allom'd Sheep Skins, at ——	1—3	
19 Calf Skins, at —— ——	4—3	
85 Oil'd Buck Skins, at ——	12—9	
10 Ruſſia Hides, at	12—9	
60 Dicker of Hides, at — *l.* 15—11—6		

Note, 50 *Goat Skins* make a *Kipp*; and other *Skins, five-ſcore to the Hundred. A Dicker is* 10 *Hides or Skins; and* 20 *Dicker a Laſt.*

A Pewterer's Bill.

Bought of *Andrew Antimony*, *October* the 7th, 1768, *viz.*

	l.	s.	d.
9 Hard Metal Diſhes, wt. 42*lb.* at 14*d.* per *lb.*	—2	9	—
1 Dozen of ditto Plates,	0	17	—
1 Chamber-pot of ditto,	0	4	—
1 Standiſh of ditto,	0	4	—
2 Tankards of ditto,	0	5	10
18 Beſt Spoons,	0	4	6
3 Hard Metal Porringers,	0	3	—
1 Salt of ditto,	0	1	10
1 Sett of Caſtors,	0	10	—
	4	19	2

Examples of Caſting.

22 pr. of Wollon Hoſe, at 3ſ. 2d. per Pair,	42 *lb.* of Pewter, at 1—2
7 and 3	7
1—2—2	8—2
3	—6
3—6—6	*Anſwer l.* 2—9—0
3—2 the odd Pair.	
l. 3—9—8 *Anſwer.*	

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Bills on Book Debts.
A Woollen Draper's Bill.

1768.   Mr. *Francis Frize*, Dr.

		s.	d.	
April 20	To 16 Yds. ½ of Black Cloth, at	18	3	*per* Yd.
ditto 24	To 4 Yds. ⅛ of Drap-de-berry, at	15	6	
May 4	To 35 Yds. mixt grey Cloth, at	10	5	
17	To 9 Yds. of fine ditto, at	17	3	
June 12	To 12 Yds. ½ of fine Broad Cloth, at	17	3	

If the Gentleman pays the Whole Bill, then make the Receipt thus:

Received the 19th of *Octo.* 1768, of Mr. *Francis Frize*, the Sum of Fifty-four Pounds, &c. in full of this Bill, and of all Accompts, for my Master, *David Draper*, per   *Michael Measurewell*.   } *l.* 54, &c.

A Mercer's Bill.

1768.   Madam *Dinah Dilatory*, Dr. to *Bryan Brocade*, viz.

	Yards.	s.	d.	
Mar. 26	To 16 ½ of flower'd Sattin, at	14	9	*per* Yd.
April 14	To 14 of Venetian Silk, at —	11	8	
ditto 26	To 99 of Mohair, at	6	3	
May 26	To 14 ½ of flower'd Damask, at	9	7	
June 7	To 5⅝ of Genoa Velvet, at —	21	6	
ditto 26	To ¾ of Lutestring, at	4	7	

If Part of this Bill is paid, write thus:

Received of Madam *Dinah Dilatory*, Twelve Pounds Ten Shillings, in Part of Payment for my Master, *Bryan Brocade*, per   *Henry Hunter*.   } *l. s. d.*   12 10 00

A Corn Chandler's Bill.

1768.   Mr. *Robert Racer*, Dr. to *Lional Livery*.

		s.	d.	
April 14	To 5 Quarters of Oats, at —	2	3	*per* Bush.
May 16	To 9 Bushels of Beans, at —	4	10	
June 12	To 7 Bushels of Bran, at —	1	10	
	To 19 Bushels of Oats, at —	1	11	
ditto 14	To 16 Bushels of Beans, at —	3	11	

A Tobac-

A Tobacconist's Bill.

1768,	Mr. *Francis Fume*, Dr. to *Richard Raisecloud*, viz.	d.
May 1,	To 1 Hhd. of Tobacco, qt. nett, 569 lb. at ———	$10\frac{1}{2}$ per *lb.*
ditto 25	To 1 Box qt. 75 lb. $\frac{1}{2}$ nett,	$11\frac{3}{4}$
June 4	To 5 Bags of Old *Spanish*, qt. nett 671 *lb.* at ———	$3\frac{1}{4}$
July 12	To $\frac{1}{2}$ Hhd. qt. 334 Grofs Tare 42 nett, 293 *lb.* at ———	$5\frac{1}{4}$
7ber 7	To 2 Rolls of Tobacco, qt. 94*lb.*	$9\frac{1}{2}$

A Stationer's Bill.

1769	Mr. *Sifcera Scribler*, Dr. to *Phineas Foolfcap*, viz. Reams	s.	d.
July 12	To 57 of Demy Paper, at ——	10	9 per R.
ditto 13	To 195 of 2d Foolfcap, at ——	6	3
August 2	To 375 of 2d Demy, at ——	8	2
7ber 6	To 95 of French Royal, at ——	2	6
8ber 29	To 26 Rolls of Parchment, at	15	11

Note, *A Roll of Parchment is* 60 *Skins: A Ream of Paper* 20 *Quires*; *and Bale of Paper* 10 *Reams.*

A Bricklayer's Bill.

1769.	Mr. *Martin Meffuage*, Dr. to *Peter Pantile*, viz.
March 25	To 25 Thoufand of Bricks, at 16s. per M.
ditto 30	To 11 Thoufand of Plain Tiles, at 20s. 6d. per M.
April 1	To 28 C. of Lime, at 12s. per C.
ditto 9	To 20 Load of Sand, at 3s. 6d. per Load.
May 20	To 140 Ridge Tiles, at 8s. 6d. per C.
June 24	To 90 Days Work myfelf, at 3s. per Day.
	To 90 Days my Man, at 2s. 6d. per Day.
	To 90 Days another Bricklayer, at 2s. 6d.
	To 90 Days for two Labourers, at 20d. per Day each.

Note, 1000 *plain Tiles is* 1 *Load; and* 25 *Bags or Buſhels of Lime* 1 C. *A Brick muſt be* 9 *Inches long, and* 4 *Inches* $\frac{1}{2}$ *broad. Bricks are of three Sorts*, Plaice Bricks, Red and Grey Stock Bricks. ——

Here it is neceffary to give a general Rule for the cafting up any Thing fold by the Thoufand; as Bricks, Tiles, Clinkards,

Clinkards, or *Flanders* Paving Bricks, and several other Things mentioned in the Book of *Rates*, *viz.* Barrel Hoops, Goose Quills, Oranges and Lemons, Squirrel Skins, Billets, &c.

And the easy Rule is this, viz.

Multiply the given Number by the Shillings in the Price, (if the Price be at so many Shillings *per* M) and always cut off three Figures or Places towards the Right-hand; and the Figures towards the Left-hand are Shillings, which divide by 20, to bring them into Pounds; and those Figures separated towards the Right-hand multiply by 12, the next inferior Denomination; and still cut off, or separate three Places towards the Right-hand, and the Figures toward the Left are Pence; and the three last Figures cut off, multiply by 4; and still separate three Places toward the Right-hand, and the Figures toward the Left are Farthings.—And if the Price be Shillings and Pence *per* Thousand, then reduce the Price into Pence, and multiply the given Number by the Pence contained in the Price, cutting off three Places toward the Right as aforesaid, and the Figures toward the Left are Pence, which bring into Pounds, according to Rule; and multiply the Remainder, or Figures cut off by 4, &c.

Example.

24650 Brick, at 17*s.* *per* Thousand.

17

172550
24650

Ans. Shillings 41,9|050 20*l.* 19*s*, and $\frac{600}{1000}$ of a Shil. or *l.* 20,19$\frac{12}{600}$

Example 2.

261324 plain Tiles, at 16*s.* 6*d.*

198   12

2090592   198 *d.*
2351916
261324

Pence   51742,152
Divide *per* 12)   4
20)*s.* 4311—10*d.* (608

l. 215—11—10 and $\frac{600}{1000}$ of a Penny.

When Things bought by the Thousand, and retailed by the Hundred, as particularly *Dutch* and *English* Pantiles; then follow this Rule, *viz.*

Multiply the given Quantity by the Price, whether Shillings, or Shillings and Pence. If Shillings, multiply by the Number of Shillings, and cut off two Figures or Places toward the Right-hand, and those toward the Left are Shillings; which reduce to Pounds as usual; and what remains, that is, the Figures cut off, multiply by 12; and again cut off two Places more toward the Right-hand, and the Figures to the Left are Pence; and what remains multiply by 4, &c.

Example.

1726 Pantiles, at 7s. per C.

$$\begin{array}{r} 7 \\ \hline 120|82 \\ \\ 12 \\ \hline 9|84 \\ 4 \\ \hline 3|36 \end{array}$$

That is, 6*l*. 0*s*. 9*d*. $\frac{1}{4}$ and $\frac{36}{100}$ of a Farthing.

If the Price be Shillings and Pence, multiply by the Pence contained in the Price, and proceed as before; and then the Figures toward the Left-hand will be Pence; which reduce to Pounds, according to Rule.

Example.

2964 Stock Bricks, at 2s. 6d. per C.
30 Pence

$$\begin{array}{r} \text{Pence } 889|20 \\ 4 \\ \hline 80 \end{array}$$

That is, 3*l*. 14*s*. 1*d*. and $\frac{80}{100}$ of a Farthing, or $\frac{20}{100}$ of a Penny.

This Method is preferable to *Practice*, because of its Exactness for the odd Number above Thousands or Hundreds, which would be puzzling to be very exact as to the odd Number; but by this Method, the Question is solved to the 1000 or 100 Parts of a Farthing; as may be seen by the foregoing Examples of the Operation.

Of

Of Bills of Exchange.

BILLS of Exchange are either Inland, or Foreign: The Inland Bills are drawn by one Trader in one City or Town, upon another of another City or Town in the same Kingdom; as *London* upon *Bristol*, or *Exeter* upon *London*, &c. and these chiefly concern our Shop-keepers, and wholesale Traders, either of Town or Country, and the Foreign more immediately concern the Merchant.

Bills of Exchange, if handsomely drawn, must be written in a fair Hand, on a long Piece of Paper, about three Inches broad; and writ in Form after the following Precedents.

A Bill payable upon Sight.

New-York, 6th *October*, 1769.

AT Sight hereof, pay to Mr. *George Greedy*, or his Order, the Sum of Fifty Pounds, *Philadelphia* Currency, for Value received of *Christopher Cash*; and place it to the Accompt, as *per* Advice, of

To Mr. Peter Punctual,　　　Your humble Servant,
　　Merchant in　　　　　　　Daniel Drawbill.
　　Philadelphia.

Note, A Bill at Sight is payable three Days after the Acceptor seeth it.

New-York, *November* 4, 1769.

SEven Days after Sight hereof, pay to Mr. *Nathan Needy*, or his Order, Twenty-four Pounds, Ten Shillings, *New-England* Currency, old Tenor, for Value received here of Mr. *Timothy Transfer*, and place it to Accompt, as *per* Advice from

To Mr. Simon Certain,　　　Your Friend and Servant,
　　Hatter, in *Milk-*　　　　Michael Moneyman.
　　Street, Boston.

If Mr. *Needy* sends his Servant, *Andrew Benson*, to receive the Money; after he hath writ his Name on the Back of the Bill, (which is his Order) the Servant must write a Receipt to his Master's Name, thus:

REceived, November 17, 1769, *the full Contents of the within mentioned Bill, being Twenty-four Pounds, Ten Shillings.*

Witness,　　　　　　　　　Nathan Needy.
　Andrew Benson.

A Foreign Bill of Exchange.

Philadelphia, May 1st, 1768.

Sir,

AT thirty Days after Sight of this my first of Exchange, my second, third or fourth, of the same Tenor, and Date, not being paid, pay to Mr. *Stephen Emerson,* or Order, the Sum of One Hundred and Sixty Five Pounds *Sterling,* Value received here, and place the same to Accompt, as *per* Advice from

To Mr. Simon Surepay,   Your humble Servant,
  Merchant, *in* London.   *Ebenezer Reynolds.*

The Acceptance is thus wrote under the Bill:
Accepted this 16*th Day of* November, 1768.
per Simon Surepay.

Notes on Bills of Exchange.

1. THE *Acceptor of any Bill is become absolute Dr. to the Person to whom the Bill is payable for the Contents thereof.*

2. *The Person to whom the Bill is payable, must demand the Money the very Day it becomes due, and if the Acceptor die before it becomes due, it must be demanded of the Executor or Administrator.*

3. *The Drawer of any Bill must always give his Correspondent a Letter of Advice, that he hath drawn such a Bill on him for such a Sum, &c.*

4. *None may pay a Bill without such a Letter of Advice.*

5. *A Bill is due the third Day after the Expiration of the Time mentioned in the Bill.*

Of Endorsing.

IT frequently happens, that between the Acceptance of a Bill, and the Time of Payment, the Party to whom it is first made payable, hath Occasion to pay it away; if so, he writes his Name on the back of the Bill, which is his Order, (as said before) and gives it to the Person he is indebted to, and then he is impowered to receive the Money: And it may be, the second Person also wants to pay it away: and then he writes his Name likewise under the other, and de-
livers

livers it to a third Perſon to receive the Money; and it may be, the third does the ſame, and delivers it to a fourth Perſon, &c. All that do ſo are Endorſers; and he that laſt hath the Bill, if the Acceptor will not pay it, may ſue him or the Endorſers, or Drawer, or any of them, for the Money.

An Endorſement is generally in theſe Words, *viz.* Pay *the Contents of the within mentioned Bill to* Henry Haſty.

George Greedy.

But many times the Name only is accounted ſufficient.

Of Proteſting.

WHEN a Bill is to be *proteſted*, the Party that hath the Bill muſt go to a *Publick Notary* (not a common *Scrivener*) whoſe Buſineſs it is, and he goes with you to the Acceptor's Houſe and demands Payment, &c. and then he draws up a *Proteſt* according to Law; which is to be returned to the Drawer within the Time limited, &c.

It is needleſs to give here the Form of *Proteſt,* becauſe no Man can do it of himſelf.

A Bill of Debt.

KNOW *all Men by theſe Preſents, That I* Lawrence Lackcaſh, *of* Boſton, *Vintner, do owe and am indebted unto* Charles Crediman, *of the ſame Place, Salter, the Sum of One Hundred and Fifty Pounds lawful Money of* Boſton, *old Tenor, which ſaid Sum I promiſe to pay unto the ſaid* Charles Crediman, *his Executors, Adminiſtrators, or Aſſigns, on or before the* 24th *of* December *next enſuing the Date hereof. Witneſs my Hand and Seal, this* 6th *Day of* October, 1768.

Sealed and Delivered,
in the Preſence of   Lawrence Lackcaſh.

A Bill for Money borrowed.

REceived and borrowed *of* Oliver Overcaſh, *of* Philadelphia, *Merchant, Fifty Pounds, which I do hereby promiſe to pay on Demand. Witneſs my Hand this* 6th *Day of* October, 1768.

l. 50   Peter Penury.

The Form of an Invoice.

Port Royal, in Jamaica, July 24th, Anno 1768.

I N V O I C E of five Barrels of Indico, five Hhds. of Sugar, and five Hhds. of Pymento, shipped on board the *George* of *London*, *George Jones*, Commander, for Accompt and Risque of Messrs. *John* and *Thomas Fisher*, of *London*, Merchants, being mark'd and number'd, as *per* Margent; Contents, Costs and Charges, *viz.*

			l.	*s.*	*d.*
I F Indico 5 Barrels					
	143 *lb.*				
N°.	143				
1	146				
to	152				
5	172				
	756 *lb.* nett, at 2*s.* 2*d.* per *lb.* ——		81	8	—
	Sugar.				
	5 Hhds. Tare.				
	C.qr. lb. C qrs.lb.	*C. qr. lb.*			
	11-3-27—1-2-19	Grofs 68-0-00			
6	12-2-19—1-3-00	Tare 8-3-12			
to	13-2-13—1-2-16	——			
10	14-1-15—1-3-11	Nett 59-0-16			
	15-1-10—1-3-22	at 24*s.* per *C.*	70	19	5.
	68-0-00—8-3-12				
	Pymento.	*lb.*			
	5 Hhds. Tare	2026 Grofs			
	lb. lb.	389 Tare.			
	432——84	——			
11	396——72	Nett 1637 at 11*d.* ¼	.76	14	8¼
to	410——81	per *lb.*			
16	376——70	Charges			
	412——82	To Cost of 5 Barrels and			
	——	10 Hhds. 4-7-9			
	2026——389	To Storage——1-0-0	5	7	9
			234	19	10¼
	To Commiffion at 5 *per C.*		11	14	11¾
	Errors excepted, *per A. B.*		—	—	—
			246-14-10		

The

The Form of an Account of Sales.

AN Account of Sales of 2756 Ells brown Oznabrigs; 1112 Yards of blue Linen; 2 Pieces of black Cloth, qt. 39 Yards; 40 Pair of Thread Stockings; and 175 Ells of Bag Holland; received from on board the Ship *Good Success, Samuel Sharp,* Commander, for Account of Mr. *Lawrence Lucky,* of *London,* Merchant.

1769.	Dr.	l.	s.	d.	1769.	Contra	Cr.	l.	s.	d.
March 17	To Porteridge of ditto,	0	17	6	March 2	By Cash, for 2756 Ells of brown Oznabrigs, fold at 8d. ½ per Yard, making 3456 7/12 Yards,		22	8	2
	To Commission on Sales, at 5 per C.	12	16	9	ditto 31	By Benja. Baker, fold him 1112 Yds. of blue Linen, at 7d. ½ per Yard,		34	15	0
	To Storage, at 2½ per Cent.	6	8	4½	ditto 29	By James Smart, for 39 Yards of black Cloth, fold him at 15s. per Yard,		29	5	0
		20	2	7½	April 2	By Lawrence Monk, fold him 40 Pair of Stockings, at 7s. 10d. per Pair,		15	13	4
	To your Account Current for the Nett Proceed, bad Debts excepted,	236	12	7½	April 8	By ditto for 175 Ells of Bag Holland, at 6s. 3d. per Ell,		54	13	9
		l. 256	15	3				l. 256	15	3

New-York, April 13, 1769.
Errors excepted, per *Charles Careful.*

The Extraction of the Square and Cube Roots, of great Use in Measuring, Gauging, &c.

The Square Root.

1st. A Square Number is any Digit, or any other Number, which being multiplied into itself, produceth a Square Number; as 4 multiplied by 4, produceth 16; so 16 is the Square Number, and 4 is said to be the Root of 16, because it grows from, or is produced of 4; so 4 is the Square of 2, for twice 2 is 4, and 9 is the Root of 81, for 9 times 9 is 81, &c.

2dly, To extract the Square Root of any Number, is to find another Number, which multiplied by (or into) itself, produces the Number given, and is a Proof of the Work.

3dly, Square Numbers, are either single or compound.

4thly, All single Square Numbers, with their respective Roots, are contained in the following Table, *viz.*

Roots.	1	2	3	4	5	6	7	8	9
Squares.	1	4	9	16	25	36	49	64	81

5thly, When the Root of any Square Number is required less than 100, and yet not exactly a single Square expressed in the Table above; then you are to take the Root of the Square Number expressed in the Table, which (being less) comes the nearest to the given Number to be squared; As suppose 60, the nearest Root to it (as being less) is 7, and 12 being given, the Root belonging to it is 3.

6thly, A compound Square Number is that which is produced of a Number consisting of more Places than one, multiplied by itself, and never less than 230: So 459 is a compound Square Number, produced by the multiplying 27 into itself.

7thly, The Root of any Number under 100 may be easily known by the foregoing Table of single Squares: But to extract the Root of a compound Number of several Places, observe the following Directions, in Relation to the Finding the Root of this Square Number 45796.

1. Set.

1. Set a Point over the Place of Units thus, 45796, and so successively over every second Figure towards the Left-hand, as thus, 45796; and again thus, 45796. Thus must your Number be prepared for Extraction in Natural Numbers; But in the Decimals, you must point from the Place of Primes towards the Right-hand, omitting one Place, as above; and if the Decimals are odd, affix a Cypher towards the Right-hand of them to make them even. Your Number thus prepared, draw a crooked Line on the Right of the Number as in Division; and indeed the Operation of the Square Root is not much unlike Division; only there the Divisor is fixt, and in the Square Root we are to find a new One for each Operation. I say having made a crooked Line

thus, 45796 (seek the nearest Root in the foregoing Table, to the first Point on the Left-hand, which here is 4, the Root of which is 2, which place behind the crooked Line thus;

$$45796 \ (2$$
$$4$$
$$\overline{\quad\quad}$$
$$(0)$$

and substract it, and there remains 0: Then to the Remainder, bring down the next Point 57 thus;

$$43796 \ (2$$
$$4$$
$$\overline{\quad\quad}$$
$$057$$

which call the Resolvend; then double the Root of the first Point, and place it on the Left-hand of the Resolvend (or proper enough the Dividend) thus;

$$45796 \ (2$$
$$4$$
$$\overline{\quad\quad}$$
$$4) \ 57$$

The 4, the double of the Root 2 on the Left-hand of the crooked Line, call the Divisor, then seek how often 4, the Divisor, can be taken in 5, the first Figure of the Resolvend

(57

(57 for you are to omit the laſt Figure towards the Right-hand) which here is one, which 1 place behind the Root 2, and alſo behind the Diviſor 4 thus :

$$45796 \,(21$$
$$4$$
$$\overline{}$$
$$41) \ 57$$

Then multiply the Diviſor (now) 41, by the Figure laſt placed in the Root, *viz.* 1, and place it under the Reſolvend thus, and ſubſtract it therefrom.

$$45796 \,(21$$
$$4$$
$$\overline{}$$
$$41) \ 57$$
$$41$$
$$\overline{}$$
$$16$$

Then bring down the next Point, *viz.* 96, and place it on the Right of the Remainder 16 for a new Reſolvend or Dividend thus ; next double the Quotient, or Part of the Root, *viz.* 21, and place it for a new Diviſor to the new Reſolvend 1696, thus :

$$45796 \,(21$$
$$4$$
$$\overline{}$$
$$41) \ 57$$
$$41$$
$$\overline{}$$
$$42) \ 1696$$

Then ſeek how oft 42 in 169 ?(ſtill reſerving or omitting the unit Figure of the Reſolvend or Dividend, as aforeſaid) and I find I can have it 4 times, which I place in the Quotient, or Place of the Root, and then the Work appears thus ;

$$45796 \,(214$$
$$4$$
$$\overline{}$$
$$41) \ 57 \ \text{Reſolvend.}$$
$$41$$
$$\overline{}$$
$$424) \ 1696 \ \text{Reſolvend.}$$
$$1696 \ \text{Product.}$$

(o)

In the laft Step, I place 4 in the Root, and likewife 4 behind the Divifor 42, which makes the new Divifor 424 to the Refolvend 1696; which Divifor multiplied by 4, the Figure laft placed in the Root, produced 1696; equal with the Dividend or Refolvend aforefaid, as in the Operation may be feen. So that the Square Root of 45796 is 214; for 214, multiplied into itfelf, produces 45796, the Number given, whofe Square Root was fought.

More Examples.

What's the Square Root of 12299049 (3507 the Root?
```
                        9
                       ───
    1ft Divifor 65)   329 Refolved.
                     325 Product.
                     ───
    2d Divifor 700)   490 Refolvend.
                     000 Product.
                     ───
    3d Divifor 7007) 49049 Refolvend.
                     49049 Product.
                     ─────
                       (0)
```

Decimally.

```
                   · · · · ·
              160,000000(12,649
              ────────────────
    1  Divifor 22)   60
                     44
                    ───
    2d Divifor 246)  1600
                     1476
                     ────
    3d Divifor 2524) 12400
                     10096
                     ─────
    4  Divifor 25289) 230400
                      227601
                      ──────
                       (2799)
```

Note,

Note, *That when the Divisor cannot be had in the Resolvend, then place a Cypher in the Quotient, and also on the Right of the Divisor, and bring the Resolvend a Step lower, and then bring down the next Square, &c. as in the Example above may be seen.*

Note further, *If any Remainder happen to be after Extraction, you may proceed by annexing Pairs of Cyphers to the Left of the given Number, and so come to what Exactness you please.*

Note also, *Such Numbers given for Extraction that leave Remainders, are by some called* Irrationals, *because their Roots cannot be exactly discovered, but still there will be something remaining, though you work by whole Numbers of Fractions : As in the Example above, where the Remainder is* 2799.

The Extraction of the Cube Root.

TO extract the Cube Root of any Number, is to find another Number, which multiplied by itself, and that Product by the Number found, produces the Number given for Extraction.

From the foregoing Table for Extraction of the Square Root, proceed the several Squares of the Cube Root, *viz.*

Roots,	1	2	3	4	5	6	7	8	9
Squares,	1	4	9	16	25	36	49	64	81
Cubes,	1	8	27	64	125	216	343	512	729

1*st*, To prepare any Number for Extraction, make a Point over Unity, and so successively over every third Figure, missing two between each Point ; but in Decimals, you must point from the Place of Units to the Right-hand, &c.

Example.

Extract the Cube Root of 46656, prepared thus, as above directed.

46656

Here are but two Points, therefore the Root will have but two Places.

2*dly*, The Number being prepared, seek in the foregoing Table the nearest Root to the first Point or Period 46, which you will find to be 3, which place in the Quotient thus, 46656 (3 the Cube or Triple whereof, *viz.* 3, is 27,

which

which place under your firſt Point 46, as in
the Margent; the which ſubſtract from 46,
and there reſts 19; this is your firſt Work,
and no more repeated. Then to the Re-
mainder 19, bring down the next Period,
viz. 656 (which is the laſt) and place it on the Right of
the Remainder 19, thus;

$$46656\,(3$$
$$27$$
$$\overline{}$$
$$19$$

$$
\begin{array}{l}
46656\,(3 \\
27 \\
\overline{} \\
19656 \text{ Reſolvend.}
\end{array}
$$

Then draw a Line under the Reſolvend; next ſquare the
3 placed in the Quotient; which makes 9, which multiplied
by 300 makes 2700 for a Diviſor, which place accordingly
thus;

$$
\begin{array}{l}
46656\,(3 \\
27 \\
\overline{} \\
2700)\ 19656
\end{array}
$$

Then ſeek how often 2 in 19? *Anſwer,* but 6 times, be-
cauſe of the Increaſe that will come from the Quotient, then
multiply the Diviſor by 6, and the Product will be 16200;
which place orderly under the Dividend thus;

$$
\begin{array}{l}
46656\,(36 \\
27 \\
\overline{} \\
19656 \\
16200
\end{array}
$$

Then proceed to find the Increaſe coming from the Quo-
tient thus; Square your laſt Figure 6, and it makes 36;
which multiply by 3, the other Figure of the Quotient, it
gives 108; which multiplied by 30, makes 3240. This
place alſo orderly under the laſt Number before ſet down,
viz. 16200, and the Work will appear thus;

$$
\begin{array}{l}
46656\,(36 \\
27 \\
2700)\ \overline{19656} \text{ Dividend.} \\
16200 \\
3240 \\
216 \\
\overline{19656}
\end{array}
$$

                                           Then

Then cube the Figure laſt placed in the Quotient, *viz.* 6, and it makes 216 ; which place orderly likewiſe under the Line 3240, as above, then add the three Lines together, and they make 19656 (for ſo many you always have after the firſt Operation.) And ſeeing the Total to be equal to the Dividend above, *viz.* 19656, and no more Periods to bring down, I ſee the Work is finiſhed, and find the Cube Root of 46656 to be 36.

Some Geometrical Problems uſeful in Menſuration.

Upon a right Line given to erect a Perpendicular, as in Figure 1.

LET *CD* be the Line given to have a Perpendicular raiſed on it from *B*, with the Compaſſes (opened at a ſmall convenient Diſtance) place one Foot in the point *B*, and with the other make two marks *E* and *F*, on either Side of *B* ; then open the Compaſſes to a more large and convenient Diſtance, and make the Arch *GG*, by ſetting one Foot in *E*, and as near as you can over the Point *B*, then (the Compaſſes being open at the ſame Diſtance) place one Foot on the Point *F*, and deſcribe the Arch *HH*, croſſing the former at the Point *A* ; thro' which Interſection with a Ruler draw the Line from *A* to *B*, which will be perpendicular to the Line *CD*.

How to raiſe a Perpendicular on the End of a Line.

This is effected ſeveral Ways ; but I ſhall inſtance only two, which are very eaſy.———See Figure 2.

Firſt Method.

Suppoſe the Line *AB* be given to raiſe a perpendicular towards the End.

Firſt open your Compaſſes to any ſmall diſtance, and ſet one Foot in the Point *A* ; and with the other deſcribe the Arch *FED* ; then with one Foot of the Compaſſes in *D* (they being opened to the ſame Diſtance) croſs the Arch in *E* ; and then ſetting one Foot in *E*, with the other make the Arch *AFG*, croſſing the firſt Arch in *F*. Again, ſet one Foot in *F*, and with the other deſcribe the ſmall Arch *HH*, croſſing the former in the Point *C* ; ſo the Line *AC* being drawn is the Perpendicular required.

The

The Second Method.

Admit *B* be the Point given on which to draw the Perpendicular *B I*. Open the Compasses to any small Distance; and setting one Foot in the Point *B*, pitch down the other Foot at Random, as suppose at *K*; then the Foot resting in *K* turn the other about till it cross the Line *A B* in *L*; then draw the Line *K L*, and set the same Distance *K L*, which the Compasses already stand from *K* to *M*; so a Line drawn from *B*, thro' *M*, is the Perpendicular on the End of the Line *A B*.

How to divide a Right Line into two equal Parts, and at Right Angles; as in Figure the 3d.

Suppose the Line *A B* be given to be divided into 2 equal Parts, at Right Angles. Take in the Compasses any Distance above Half the Length of *A B*, and setting one Foot in the Point *A*, with the other draw the Arch *C D E*; then (the Compasses unaltered) set one Foot in *B*, and with the other cross the former Arch both above and below the Line in the Points *F* and *G*; then a Line drawn from *F* to *G* shall intersect, or cut the given Line in *H*, and divide the Line *A B* into two equal Parts, and at Right Angles.

Of Parallel Right Lines :

Right lined Parallels, are Lines drawn on a Plane of equal Length and Distance; and tho' infinitely extended will never meet, and in all Parts retain an equal Distance such as these underneath.

```
B ——————————————————— C
C ——————————————————— D
```

To draw a Right Line Parallel to another Right Line at a Distance given; as in Figure the 4th.

Take in your Compasses the given distance *G H*, then setting one Foot in *E*, draw the Arch *I K*; then moving to *F*, describe the Arch *L M*; then laying a Ruler on the Top of the two Arches, just touching them, draw the Line *N O*, which will be parallel to the given Line *E F*.

To bring any three Points (not in a strait Line) into a Circle, by finding the Centre, so that the Circle shall pass thro' those Points; as in Figure the 5th.

Let the three Points given be *A B* and *C*, through which it is required that a Circle be drawn. First, set one Foot on the
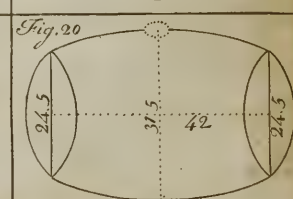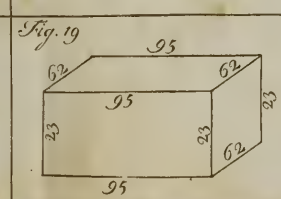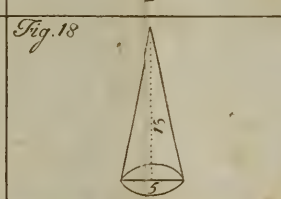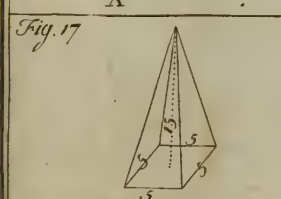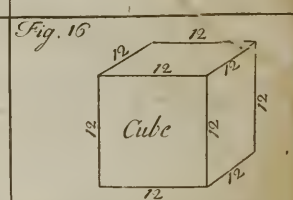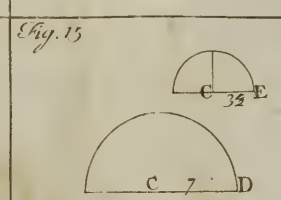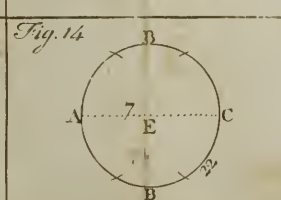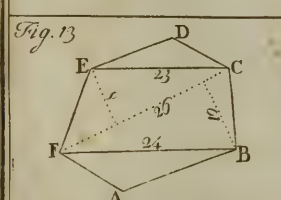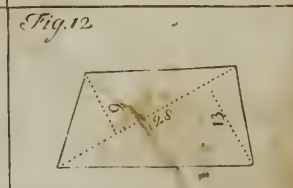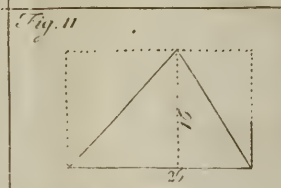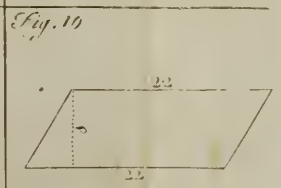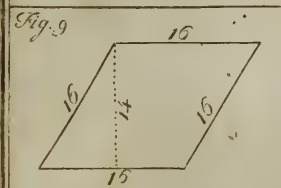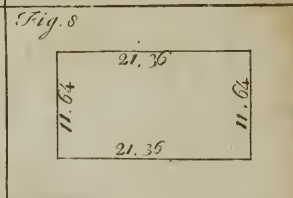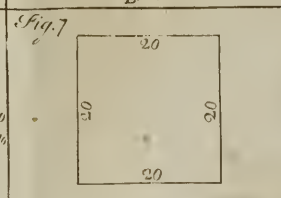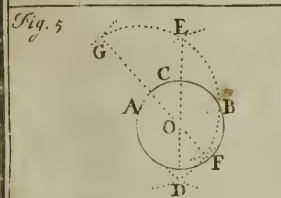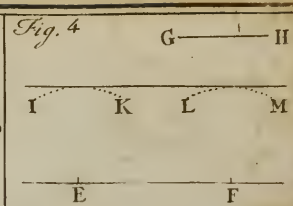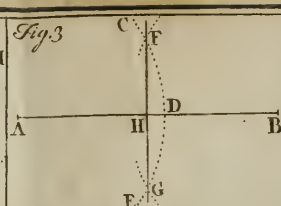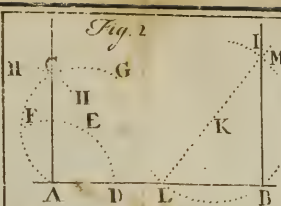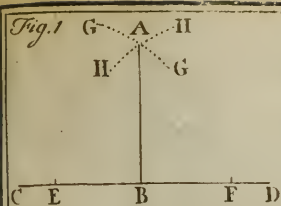
the Compaſſes in one of the given Points, as ſuppoſe in *A*, and extend the other Point to *B*, another of the Points, and draw the Arch of a Circle *G F D*; then (the Compaſſes not altered) ſet one Foot in *B*, and with the other croſs the ſaid Arch with two ſmall Arches, in the Points *D* and *E*, and draw the Line *D E*. Thirdly, ſet one Foot in *C*, (the Compaſſes being at the ſame Diſtance) and with the other Foot croſs the firſt Arch *G F D* in the Points *F* and *G*, and draw the Line *F G*, croſſing the Line *D E* in the Point *O*, which is the Centre ſought for; in which, place one Foot of the Compaſſes, and deſcribe the Circle at the Diſtance *O A*, and it paſſes through all the given Points *A B* and *C*.

How to make a Line of Chords Geometrically, to any aſſigned Length or Radius.

Since in the Art of Dialing, there is frequent Uſe made of the Line of Chords, it is proper here to ſhew the Making thereof.

A Line of Chords is 90 Degrees of the Arch of a Circle, transferred from the Limb of a Circle to a ſtreight Line; now every Circle, whether great or ſmall, is divided (or ſuppoſed to be divided) into 360 equal Parts, called Degrees: So the Semi or Half Circle contains 180, the Quadrant or Quarter 90, and the Radius or Semi-diameter (which is that Line on which the Circle or Semi-circle is drawn or deſcribed) noted in Figure the 6th of the *Line of Chords*, with the Letters *A B*, is always equal to 60 Degrees of that Circle which it deſcribes, and therefore 60 Degrees of a Line of Chords is called the Radius thereof.

To make the Line of Chords : As in Figure the 6th.

Firſt draw a Line of any Length, as *C B D*, and on the Middle thereof draw the Perpendicular *A. B*; next open your Compaſſes to the Radius or Length that you would have your Line of Chords be of; which admit *A. B.* and with that Diſtance on *B.* as the Centre, deſcribe or draw the Semi-circle *C A D*, which is divided into two equal Parts, or Quadrants, by the perpendicular Line *A B*; thirdly, divide the Arch or Quadrant *A R D*, in 90 equal Parts or Degrees; which is done by taking the Length of the Lines *A B*, and ſetting that Diſtance on the Quadrant *A D*, and from *D* to *R*; ſo is *D R* 60 Degrees, and *A R* 30 Degrees; then take the Diſtance *A R*, and ſet it from *D* to *S*, ſo is the Quadrant divided into three equal Parts, at the Point *S*, and *R*, each

I con-

containing 30 Degrees; this done, divide the ſeveral Spaces between *A R*, *R S*, and *S D*, into three equal Parts, each of which will be 10 Degrees, according as the Numbers are ſeen and ſet apart to them: And theſe again divided into two equal Parts, each Part contains 5 Degrees; and every of thoſe into 5 ſmaller, as in the Repreſentation; and ſo the whole Quadrant is divided into 90 Degrees. Fourthly, The Quadrant *ARSD* being thus divided into 90 Degrees, ſet one Foot of the Compaſſes in *D*, and open the Foot to *A*, and deſcribe the Arch *AEF*, touching the Line *CD*, in *F*; ſo is the Point *F*, upon the Right Line *C D*, the Chord of 90 Degrees. Fifthly, open the Compaſſes from *D* to 80 Degrees, and deſcribe the Arch 80 *GH*; ſo ſhall the Point *H* be the Chord of 80 Degrees. Sixthly, Open the Compaſſes from *D* to 70, deſcribe the Arch 70 *I K*, ſo is *K* the Chord of 70 Degrees. Again, Open the Compaſſes from *D* to *R*, the Radius of 60 Degrees, and deſcribe the Arch *RLB*, ſo is *B* the Chord of 60 Degrees, equal to the Radius. Do the ſame by 50, 40, 30, 20, and 10, and then you will have the Line *DF* divided into 90 unequal Parts, called Chords, as in Figure 6.

Thus much for the Line of Chords, frequently made uſe of in Dialling, where there is not the Conveniency of having a Mathematical Inſtrument-maker near at hand.

Note, *A Degree is the* 360th *Part of any Circle, and every Degree is ſuppoſed to be divided into* 60 *equal Parts, called Minutes; and every Minute is ſuppoſed to be ſubdivided into* 60 *equal Parts called Seconds, &c.*

Of Menſuration of Plains and Solids.

THE ſeveral Kinds of Meaſuring are three, *viz.*
1ſt, *Lineal*, by ſome called *Running Meaſure*, and is taken by a Line, and reſpects Length without Breadth; the Parts of which are,

12 Inches 1 Foot, 3 Feet 1 Yard, 16 Feet and Half a Rod, Pole, or Perch.

All Kinds of ornamental Work, ſuch as Cornice Freeze, &c. are meaſured by *Running Meaſure*.

2dly, *Superficial*, or ſlat ſquare Meaſure is that which reſpects Length and Breadth; and the Parts are, *viz.*

144 Inches one Foot, 72 Inches half a Foot, 36 Inches one Quarter of a Foot, 18 Inches Half a Quarter of a Foot, 272 Inches and a Quarter one Rod, 136 Feet Half a Rod; 1296 Inches, or 9 Feet, one ſuperficial ſquare Yard.   3dly,

3*dly*, *Solid*, or Cube Measure, which respects Length, Breadth and Depth, or Thickness; and the Parts are, *viz.*

1728 Inches 1 Foot, 1296 Inches three Quarters of a Foot, 864 Inches Half a Foot, 432 Inches one Quarter of a Foot, and 27 Feet 1 solid Yard.

Superficial Measure.

TO measure Things that have Length, and Breadth, such as Boards, Glass, Pavement, Wainscoat, and Land, is to take the Dimensions of the Length and Breadth, according to the customary Method used in each Particular; as Board and Glass are measured by the Foot, but the Dimensions are taken in Feet and Inches, and the Content given in Feet.

Wainscot and Paving by the Yard, as are also Plaistering and Painting, and the Dimensions are taken in Feet and Inches, and the Content given in Yards.

Dimensions of Land are taken by the Pole or Chain, of 4 Poles in Length; all which is taken in square Measure superficial, that is, an Inch, Foot, Yard or Pole; which is not only sometimes in Length, but also as much in Breadth too; or if it wants of it one Way, it must be made up the other.

Of the Square.

The squaring of any Number, is multiplying it into itself, as 12 Inches multiplied by 12 Inches, make 144 Inches square, on the Flat. The Square of any Thing is found four several Ways, *viz.* by whole Numbers, by Decimals, by Practice, and by Cross Multiplication; in each of which Methods I shall give Examples of Operation.

When any thing is to be measured, it must be considered what Form or Fashion it is of; and then it must be measured according to the several Rules for each Figure.

First, If it be a Square of equal or unequal Sides, that is, one Way longer or wider than the other (as Boards are almost always much longer than they are broad) then the Length and Breadth must be multiplied one by the other, which makes it square Measure, as was hinted before; and if that Product be divided by its proper Divisor, as 144 is the Divisor for flat or superficial Measure, and 1728 the Divisor for cube or solid Measure; the first being the square Inches in a superficial square Foot, and the other the cubick square Inches in a solid Foot square.

Example.

Admit a Board be 12 Inches broad, and 8 Feet, or 96 Inches long, how many square superficial Feet doth it contain?

I 2   B. 12

$$\begin{array}{c|c} \text{B.} \quad \text{12} & \text{L. } 96 \end{array}$$

```
        96
        12
       ────
144) 1152 8 Feet.
     1152
     ────
      (o)
```

Here the Length in Inches is multiplied by the Breadth in Inches, and the Product 1152 divided by 144, the square Inches, in a Foot, quotes 8 Feet square for the Contents of the Board.

A general Rule for Dispatch.

If the Length of a Board, or Piece of Glass be given in Feet and the Breadth in Inches, multiply one by the other (without any Reduction) and divide the Product by 12, and the Quotient will be the Answer in Feet, and the Remainder will be Parts of a Foot. So the foregoing Example might have been sooner done by dividing 96 in Length, by 12 the Breadth, and it quotes 8 Feet for the Content, as by the former Way.

Example.

Suppose a Board be 14 Feet long, and 15 Inches broad, what's the Content in square Feet ?

14 Feet long.
15 Inches broad.
────
12) 210
────
Feet 17—6$\frac{6}{12}$ or $\frac{1}{2}$

So the Answer is 17 Feet and $\frac{1}{2}$. And so for any other Example of this Kind.

Or, conciser thus,

```
        14
   by   1—3
       ────
        14
3 In. ¼  3¾ or ½
```
Answer. 17 $\frac{1}{2}$

Here 3 Inches is the $\frac{1}{4}$ of a Foot, whereof $\frac{1}{4}$ of 14 is taken and added to 14, and it makes 17 Feet and $\frac{2}{4}$, equal to $\frac{1}{2}$.

If a Board be wider at one End than the other, then take the Breadth in the Middle, or add the Measure of both Ends toge-

together and take the Half for the mean Breadth, which multiply by the Length.

Example.

Suppose a Board to be 120 Inches long, and the narrowest End 10 Inches wide, and the broadest End 24 Inches wide ; what is its Content in superficial Feet ?

Add $\begin{cases} 34 \text{ broadest End.} \\ 10 \text{ narrowest.} \end{cases}$

the 44
Half ——
is 22 the Medium.
120 the Length.

144) 2640 (18 Feet ⅓ *Answer.*
   144 .
   ——
   1200
   1152
   ——

Rem. 48 | 4 | 1
  ——————— or 4 Inches ; 48 the Remainder
144 | 12 | 3   is ⅓ of 144.
      Or thus.

      Feet. Inches.
      10 —— 00 narrowest End.
      ——— 10 the mean Breadth.

      In. 10——00
For 10 In. $\begin{cases} 6\frac{1}{2}5 ——00 \\ 4\frac{1}{3}3 ——04 \end{cases}$

      18——04 *Answer.*

If a Board or Piece of Glass be ever so irregular, it may be measured very near, by taking the Breadth in 5 or 6 Places, and add the several Breadths together, dividing the Total by the Number of Places, and the Quotient will be the mean Breadth ; which multiply by the Length, &c.

Having the Breadth in Inches of any Board, or Piece of Glass, to know how much in Length of that Board or Piece of Glass, will make a Foot Superficial,

I 2   *Rule.*

Rule. Divide 144 by the Inches in Breadth, and the Quotient will be the Length of that Board that will make a Foot.

Example.

If a Board be 9 Inches broad, what Length of that Board will make a superficial Foot?

Or by the Rule of Three Reverse, thus,

   9) 144   *I. b.*   *I. l.*   *I. n.*

   ————   If 12 give 12, what 9 broad?

Inches 16 *Answer.* 12

   9) 144

Answer. 16 Inches.

If a Board be 12 Feet ½ long, and 15 Inches broad, how many square Feet doth it contain?

VULGARLY.	DECIMALLY.
Inches.	12,5
150 long.	1,25
15 broad.	————
————	625
750	250
15	125
————	————
144) 2250 (15 Feet.	Feet 15,625
144	12
————	————
810	Inches 7,500
720	4
	————
Remainder 90	Quarters 2,000

Multiply by 12 Inches 1 Foot.

   ————

144) 1080 (7 Inches.
   1008

Remainder. .72
    by 4 ¼ of an Inch.
144) 288 (2 ¼ or ½
    288
   ————
   · · ·

By

By Cross Multiplication.		By Practice.

By Cross Multiplication.

Feet.	In.
12	6
1	3

12	0
0	6
3	0
0	1 $\frac{1}{2}$

Answ. 15 —— 7 $\frac{1}{2}$

By Practice.

Feet.	In.
12	6
	1 — 3

12	6
3	1 $\frac{1}{2}$

3 Inches $\frac{1}{4}$

Facit 15 —— 7 $\frac{1}{2}$

Here the Content is found four several Ways, *viz.* by multiplying the Inches together, and dividing by 144, &c. The next Work is performed Decimally ; the third Method is by cross Multiplication ; and the last and best is by Practice.

Any of these Methods may be easily understood by the Use of the Arithmetical Part of this Book, except the Method by cross Multiplication, which, I think, hath not been shewn ; wherefore I shall explain it here.

In the Example, 1 Foot 3, stands under 12 Feet 6 ; and having drawn a Line, say, once 12 is 12 ; then I say Cross-way, 6 times 1 is 6 Inches ; so that Line is 0 Feet, 6 Inches ; Then Cross-ways again, I say 3 times 12 is 36 Inches, the 12's in 36 is 3 times, or 3 Feet ; so that Line is 3 Feet 0 Inches. Lastly, I multiply the Inches together, saying, 3 times 6 is 18, the 12's in 18 once, and there remains 6, or $\frac{6}{12}$, equal to $\frac{1}{2}$, as in the Work.

Proper Directions for Joiners, Painters, Glasiers, &c.

Rooms being generally various in their Forms, take this general Rule in all Cases, *viz.*

Take a Line, and apply one End of it to any Corner of the Room ; then measure the Room, going into every Corner with the Line, till you come to the Place where you first began ; then see how many Feet and Inches the String contains, and set it down for the Compass or Round ; then take the Height by the same Method.

Glasiers are to take the Depth and Breadth of their Work, and multiply one by the other, dividing by 144 ; Glass being measured as Board.

I 4   Having

Having thus shewn the Method of casting up Dimensions, I come now to Particulars; and the first of

Glaziers Work, by the Foot.

If the Window be square, multiply the Length by the Breadth, which will produce the Content, as abovesaid.

Examples.

A Window glaized
By Cross Multiplication

Feet.	In.
8——	9 high.
7——	3 broad.

56——	0
2——	0
5——	3
	2 $\frac{1}{4}$

Feet.	In.
8——	9
	7 Feet 3

| | 61—— | 3 |
| 3 Inches $\frac{1}{4}$ | 2—— | 2 $\frac{1}{4}$ |

| 63—— | 5 $\frac{1}{4}$ |

63——5 $\frac{1}{4}$ *Answer.*

If the Windows are arched or have a curved Form, no Allowance is made by Reason of the extraordinary Trouble, and Waste of Time, Expence or Waste of Glass, &c. And the Dimensions are taken from the highest Part of the Arch, down to the Bottom of the Window, for the Height or Length, which multiply by the Breadth, and the Product will be the Answer in Feet, &c.

Glasiers are often so very nice, as to take their Dimensions, and to measure to a Quarter of an Inch.

Example.

Feet.	In.
4——	3 $\frac{1}{2}$ long.
	2 Feet 7 $\frac{1}{4}$ broad.

8—	7
2—	1 $\frac{3}{4}$
	6 $\frac{1}{4}$ $\frac{3}{4}$
	1 $\frac{1}{4}$

6 Inches is $\frac{1}{2}$
1 $\frac{1}{2}$ is $\frac{1}{8}$
$\frac{3}{4}$ is $\frac{1}{48}$

| 11—— | 4 $\frac{1}{4}$ |

Glass is measured by the Foot, as said before; and the Price of Work in England, in Sterling Money is as follows, *viz.*

English

Englifh Glafs *per* Foot		0—5
French and Crown Glafs		1—0
Common Work, Leading included, for every Foot ⎱ square ⎰		0—6
New Leading old Glafs *per* Foot		0—3
Common Diamond Squares, each		0—1

Painters Work by the Yard.

WHEN the Wainſcot of a Room is painted, you are to meaſure round the Room with a Line, as hinted before, without girting the Mouldings, which are to be meaſured by a String, and added to the other; then multiply the Compaſs by the Height, with the Addition of the Mouldings, &c. and you have the Content in Feet and Inches, which reduced to Feet, bring into ſquare Yards by dividing by 9.

Example 1.

A Room painted.

Feet. In.

Being 45—8 in Compaſs, ⎱ What is the Content in ſquare
    10 Feet 6 high. ⎰ Yards?

$$456—8$$
$$22--10$$

$$9)\ 479—6$$

Yards 53—2—6 *Anſwer.*

Example 2.

If the Height of a Room painted be 12 Feet 4, and the Compaſs 84 Feet 11; what ſquare Yards doth it contain? Anſwer 116 Yards 3 Feet 3 $\frac{2}{3}$.

Feet. In.
    84—11 Compaſs.
    12 F. 4 high.

In. 1019—00
4 $\frac{1}{3}$ 28—03 $\frac{2}{3}$

$$9)\ 1047—03\ \tfrac{2}{3}$$

Yds. 116—03—3 $\frac{2}{3}$ *Anſ.*

Note, Double Work is allowed in Window-Shutters; Saſh-Frames and Mantlepieces are reckoned by themſelves, unleſs the Mantlepieces ſtand in the Wainſcot, and then they are to be meaſured as plain Work, deducting nothing for the Vacancy.

I 5

Prices in England. s. d.

	s. d.
Common coloured, 3 Coats in Oil, *per* Yard ——	0—6
On old Colour ———— ——— ——— ——	0—4
Walnut-tree Colour ——— ——— ——	1—0
Marble Colour, from 16*d.* to ——— ———	2—0
Sash-Frames, each ——— ———	1—0
Sash-Lights, each ——— ———	0—1
Window-Lights, one with another ——— ——	0—3
Iron Casements ——— ——— ——— ——	0—3

Joiners Work.

WAINSCOTING, the Dimensions are taken as in Painting, *viz.* by measuring the Height (indenting the String where ever the Plane goes, as well as the Painters do where ever the Brush goes) and then the Compass; which multiply one into the other, dividing the Product by 9, and the Quotient is the Answer in square Yards.

Example.

What is the Content of a Piece of Wainscoting that is 9 Feet 3 Long, and 6 Feet 6 broad?

Feet. In.

$$\begin{array}{r} 9\text{—}3 \\ 6\ \text{F. }6 \\ \hline 55\text{—}6 \\ \text{In. }6\ \tfrac{1}{2}\ 4\text{—}7\ \tfrac{1}{2} \\ \hline 9)\ 60\text{—}1\ \tfrac{1}{2}\ 6\ \text{Yds. }\tfrac{2}{3}\ \textit{Ans.} \\ 54 \\ \hline 6 \end{array}$$

The Length and Breadth being multiplied together, brings it into square Feet; which divided by 9, (the square Feet in a Yard) produces 6 Yards, $\frac{2}{3}$ for the Answer, as *per* Margin.

By Cross Multiplication thus :

Feet. In.

$$\begin{array}{r} 9\text{—}3 \\ 6\text{—}6 \\ \hline 54\text{—}0 \\ 4\text{—}6 \\ 1\text{—}6 \\ 1\ \tfrac{1}{2} \\ \hline 60\text{—}1\ \tfrac{1}{2} \end{array}$$

as before, which divide by 9, *&c.*

Once

Once more.

There is a Room wainſcoted, the Compaſs of which is 47 Feet 3 Inches, and the Height 7 Feet 6 Inches ; what's the Content in Yards ſquare ? *Anſwer* 39 Yards $\frac{1}{3}$.

	Feet. In.		Or thus.
	47—3 Compaſs.		*Yds.* In.
	7 F. 6 the Height.		15—9
			2 Yds. 6
	330—9		
6 In. $\frac{1}{2}$	23—7$\frac{1}{2}$		31—6
		6 In. $\frac{1}{2}$	7--10$\frac{1}{2}$
9)	354—4 $\frac{1}{2}$		
		Anſwer.	39—4 $\frac{1}{2}$

Anſwer. 39 Yds, $\frac{3}{9}$ or $\frac{1}{3}$

The Prices per Yard.	s.	d.
For good Wainſcot ——— ——— ———	6	0
Wainſcoting, not finding Stuff, &c. ———	2	0
Coarſe Wainſcoting ----- ——— ———	1	0
Deal Wainſcot, finding Stuff ——— ——— ———	3	0
Not finding Stuff ——— ——— ——— ———	1	6

Carpenters Work.

ROOFING, Flooring and Partitioning, the principal Carpentry in modern Buildings, are meaſured by the Square of 10 Feet each Way, that is 100 ſquare Feet.

For Roofing, multiply the Depth and half Depth, by the Front : or the Front and half Front by the Depth, and you'll have the Contents.

The Dimenſions are taken in Feet and Inches.

Example.

How many Squares doth that Piece of Work contain that meaſures 199 Feet 10 Inches in Length, and 10 Feet 7 Inches in Height ? Anſwer 21 Squares, 14 Feet, 10 Inches $\frac{5}{6}$.

	Operation,	
	Feet. In.	This Work is done by
	199—10 long.	cutting off two Places
	10 F. 7 high.	toward the right Hand,
	1998---4	and the Number on the
6$\frac{1}{2}$	99—11	Left are Squares, &c.
1$\frac{1}{4}$	16---7$\frac{5}{6}$	

21 | 14—10$\frac{5}{6}$ *Anſ.* 21 Squares, 14 Feet 10 In. $\frac{5}{6}$.

Again,

Again.

If a Floor be 49 Feet 7 Inches 4 Parts long, and 26 Feet 6 Inches broad ; how many ſquare Feet ?

The Operation by Croſs Multiplication.

Feet.   In.   Parts.

```
   49——7——4
   26——6——0
   ────────────
  294——0——0
   98——0——0
   15——2——0
   24——6——0
          3——6
          8——8
          0——2
   ────────────
13 | 14——8——4
```

Anſwer 13 Squ. 14 Feet, 8 In. 4 Pts.

Note, In meaſuring Roofing, no Deduction is made for Sky-Lights, Chimney-Shafts, &c.

In meaſuring Flooring, take the Dimenſions of the whole Floor at once in Feet, and then meaſure the Content in ſuperficial Feet of the Vacancy for the Stairs, Hearths, &c. which deduct from the whole Floor, and the Remainder is the true Content; which bring into Squares as before.

Note, In Partitioning, you muſt meaſure the Doors, Door-caſes and Windows, by themſelves, and deduct their Content out of the Whole; except by Agreement they are included; and then you muſt mention in the written Agreement, Doors, Door-caſes and Windows, included.

There are divers Sorts of Carpenters Work belonging to a Building, *viz.* Cantaliver-Cornice, Modilion-Cornice, Plain-Cornice, Guttering, Rail and Balluſters Lintale Penthouſe-Cornice, Timber-front, Story, Breaſt-ſommers, Shelving, Dreſſering, &c. all which are meaſured by Lenial, or Running Meaſure. There are alſo Doors and Door-caſes, Lant-horn Lights, with their Ornaments, Balcony-Doors and Caſes, Cellar Doors and Curbs, Columns and Pilaſters, Cupolas, &c. all which are valued by the Piece.

Carpenters Work in England, is done at *the following* Ster-ling Prices, viz.

	l.	s.	d.
Flooring, finding Boards, the Square -	1	15	0
Not finding Boards, from 2s. 6d. to ⸻	0	06	0

Roofing

Roofing with Oak	——— ———	2—00—0
Not finding Timber	———	0—12—0
Partitioning *per* Square	———	0—15—0
Not finding Timber	——— ——	0—07—6
Stairs with Rails and Ballusters compleat ——		1—10—0
Sawing of Oak and Elm *per* 100 Feet ———		0—02—6
Trees for Fences ——— ——— ——		0—02—0

Oak Timber is commonly fold for 40*s. per* Tun, that is 40 Feet fquare in the Place; Afh 30*s.* and Elm 28*s per* Tun.

Note, *Carpenters meafure the Timber Frames of any Building (which they call the Carcafe) by the Square of* 10 *fuperficial Meafure, or* 100 *fquare Feet, as hinted before.*

Bricklayers and Tylers Work.

Of Walling.

WALLING is meafured by the Rod Statute-Meafure, being 272 Feet and $\frac{1}{4}$ fuperficial. The Method of taking their Dimenfions is thus; for a Wall round an Orchard or the like, they meafure the Length by a Line going over the Buttreffes; and for the Height, they meafure over the Mouldings (preffing the Line into them) even to the Middle of the Coping: They likewife take Notice of the Thicknefs of the Wall, that is how many half Bricks in Length the Wall, as in Thicknefs; for three half Bricks, that is a Brick in Length, and one in Breadth, is Standard Thicknefs; And all Walls, whether lefs or more, muft be reduced to that Thicknefs, by this Rule, *viz.* Multiply the Product of the Length and Height, by the Number of half Bricks that the Wall is in Thicknefs: which Product divide by three, and then the Quotient by 272 (the $\frac{1}{4}$ being generally neglected in Vulgar Working) and the Quotient will be Rods, at a Brick and half thick Standard Meafure.

Example.

Admit the Face of the Wall meafure 4085 Feet, and the Thicknefs be two Bricks and a Half, or five half Bricks thick. how many Rods doth it contain?

4085

$$\begin{array}{r} 4085 \\ 5 \\ \hline \end{array}$$

$$3)\ 20425$$

$$272)\ 6808\ 25\ Rods,\ \textit{Answer.}$$

$$1368$$

(8)

When the Work is wrought Decimally, then you divide by 272 $\frac{1}{4}$, or 272,25, which gives the Quotient somewhat less. But the Measuring of Brick-Work may be shortened by having the Rod of 16 Feet $\frac{1}{2}$ centesimally divided into 100 equal Parts, with which you take the Dimensions, and the Length of the Wall in those Rods; and 100 Parts multiplied by the Height, give the Content in Rods, of any Wall that is a Brick and half Thick. Deduction must be made for Doors, Windows, &c.

A Table to reduce Brick-Work to Standard Measure, *i. e.* a Brick and a Half-Thick.

Brick.

$$\left.\begin{array}{l} 1 \\ 2 \\ 3 \\ 4\frac{1}{2} \\ 5 \end{array}\right\} \begin{array}{l} \text{Substract} \\ \text{Add} \\ \text{Multiply} \end{array} \left\{\begin{array}{l} \frac{2}{3} \\ \frac{1}{3} \\ 2 \\ 3 \\ 4 \end{array}\right\} \text{Reduces to a Brick and Half.}$$

Example.

Suppose a Garden-Wall to be 254 Feet round, and 12 Feet 7 Inches high, and three Bricks thick; how many Rods doth it contain?

$$\begin{array}{r} 254 \\ 12 \\ \hline 3048 \end{array}$$

In this Operation, the Aggregate, or Total, is multiplied by 2, because twice 3 is 6, the Number of half Bricks; and that reduces the Work to Standard-Measure, as by the Table above.

In. 3048
6 $\frac{1}{2}$ 127
1 $\frac{1}{12}$ 21—2

$$3196—2$$

272) 6392—4 (23, $\frac{1}{2}$ Rods :

Of

Of Chimnies.

This Brick Work is commonly agreed for by the Hearth, and alſo ſometimes by the Rod ; and the Method of taking Dimenſions is thus : If the Chimney ſtands ſingly, not leaning againſt, or being in a Wall, and worked upright over the Mantle tree to the next Floor ; it is girt about the Breaſt for the Length, and the Height of the Story is taken for the Breadth, and the Thickneſs of the Jaumbs for the Thickneſs. But if the Chimney ſtands againſt, or in a Wall, which is before meaſured with the reſt of the Building ; then the Breadth of the Breaſt or Front, together with the Depth of the two Jaumbs, is the Length ; the Height of the Story the Breadth, and the Thickneſs of the Jaumbs the Thickneſs ; but if the Chimney ſtands in the Corner of a Room, and has no Jaumbs, then the Breadth of the Breaſt is the Breadth, the Height of the Story the Length, and the Thickneſs the Thickneſs. And for the Shaft it is commonly girt in the ſmalleſt Part, for the Length ; and the Thickneſs of both Sides, for the Tickneſs ; in Conſideration of the Widths, Pargiting, Scaffolding, &c.

Note, *There is nothing to be deducted for the Vacancy between the Hearth and the Mantle-tree, becauſe of the Widths and the Thickening for the next Hearth above.*

Arches are meaſured by taking the Breadth and half the Breadth of the Arch, and add them together ; and then to multiply the total by the Length, for the Content in Thickneſs of the Arch.

Gable Ends.

Take half the Perpendicular for the Breadth, and the Width of the Houſe for the Length, or half the Width of the Houſe for the Breadth, and the Perpendicular for the Length ; which brings the Meaſure to an Oblong, which is eaſily meaſured by multiplying the Length by the Breadth, &c.

Note, *A Perpendicular is a down or upright Line in the Work thus*| ; *There are ſeveral other Things in Bricklayers Work ; as Cornice, Facias, Streight Arches, Scheme Arches, Hips and Valleys in Tiling, and Water Courſes : All which are meaſured by the Foot Lineal, or Running Meaſure. Alſo Peers, Pilaſters, Ruſtick Work,* &c. *which are valued by the Piece. Engliſh Prices in Sterling Money.*

	l.	s.	d.
For Walls, finding Materials ———	5	—00—	0 per Rod.
Not finding Materials ——— ———	1	—10—	ditto,

For

<center>*Prices.*   l. s. d.</center>

For Tyling, finding Materials —— 1—05—0 *per* Square.
    Not finding Materials ———— 0—05—0 ditto
For Tyling, finding Materials ex-⎱ 0—10—0 *per* Rod,
    cept Tiles) that is 15 Feet square ⎰
For striping without taking down— 0—05—6 ditto.
    With taking down ——— 0—07—0 ditto.
For Pointing ———— 0—02—0 ditto.

<center>*Paving.*</center>

Pavement for Cellars, Wash-houses, &c. is measured by the Square Yard.

<center>*Example.*</center>

If a Cellar, Wash-house or Court-yard, be paved with Bricks, or pitched with Pebble, being 9 Yards 2 Feet long, and 6 Yards 2 Feet broad; how many Yards square doth it contain? *Answer*, 64 Yards 1 and ¼ Feet, as by the following Work.

Yds. F.	*Yds. F.*
9—2	9—2
6—2	6 Yards 2
54—0	58—0
6—0	3—2
4—0	3—2
4	
	64—4
64—4 *Answer.*	

Feet.
29
20
————
9)580
————
Yards 64¼

Here the Answer is found by three different Operations, and the Result of each, to the same Amount, *viz.* by Cross Multiplication, by Practice, &c.

<center>*Slating.*</center>

Is valued by the Square of 10; in some Places by the Rod of 18 Feet square; that is 36 square Yards, or 324 Feet.

☞ In Tyling and Slating, where there are Gutters and Valleys, there is commonly Allowance, which is to take the Length of the Roof all along upon the Ridge, which makes
the

the Gutter double Measure; which in some Places is allowed, in others not. Sometimes there is an Addition for hollow Ware, that is, Ridge Tiles, Gutter Tiles, Corner and Dormer Tiles; and here Customs differ: For in some Places they account one superficial Foot for every Foot lineal or running Measure; then 100 Feet lineal is reckoned a Square. In other Places, for every 100 of such Tiles they reckon one Square.

Plaistering,

Is of two Kinds, *viz.* *First*, Work lathed and plaistered, sometimes called Ceiling. *Secondly*, Plaistering upon Brick-Work, or between the Quarters in Partitioning, by some called Rendering; both which are measured by the Yard square, as the Joiners and Painters do. In taking Dimensions of Ceiling, if the Room be wainscoted, they consider how far the Cornice bears into the Room, by putting up a Stick perpendicular to the Ceiling, close to the Edge of the uppermost Part of the Cornice; and measure the Distance from the perpendicular Stick to the Wainscot; twice which Distance must be deducted from the Length and Breadth of the Room taken upon the Floor, and the Remainder is the true Length and Breadth of the Ceiling: As suppose a Floor is 24 Feet long, and 18 Feet broad, and the Cornice shoots out 6 Inches; deduct a Foot for both Ends, and the Length of the Ceiling is 23 Feet; and the same for the Breadth; it leaves 17 Feet broad; which (if the Room be square) multiplied together, the Content is 391 Feet, or 43 Yards and a Half.

<div align="center">

Example 1.

23 Feet the Length.
17 Feet broad.

———

161
23

———

9) 391 (43 Yards, 4 Feet.
36

———

31
27

———

4.

</div>

If the Ceiling of a Room be 19 Feet 10 one Way, and 17 Feet 6 the other, how many square Yards does it contain?

By Cross Multiplication, thus.

```
    19 : 10
    17 :  6        —
    _____
    133
    19
    14 . 2
     9 . 6
        5
    _____
9) 347 . 1 (38 Yds. 5 Feet 1 Inch.
```

Example 2.

How many Yards square are there in a Piece of Plaistering
that is 47 Feet 4 Inches 7 Parts long, and 18 Feet broad ?

```
    F.  I.  Pts.
47—4—7
       3 and 6
_____
142—1—9
       6
_____
9) 852--10—6 94 Yds. 6 Feet, 10 Inch, 6 Parts, Answer.
```

In measuring Partitioning for Doors, Windows, and
other Vacancies, there must be an Allowance or Deduction
made, they being Deficiencies.

	Price per Yard in England.	s.	d.
For every Yard of common Plaistering, finding Laths, Nails, &c.		0	9
Not finding Laths		0	4½
For White-washing with Size		0	1½
Partitioning, finding all Materials		0	3

Masons Work.

THE Masons Work, consisting of Stone, is of two Sorts,
viz. Superficial and Solid. Pavement, and the Face
of Stone Walls, Houses, &c. are measured as Brick Work.
If the Work have Ornaments, as Capitals, Pilasters, Rails
and Ballusters, &c. then they are valued by the Piece.

	English Price.	s.	d.
For every Foot of Plain Work in Walls, &c.		0	8
For plain Cornice, about		1	5

For

For rough Stone Wall, with Lime, 16 Feet ½ long } s. d.
    and 1 Foot high, *per* Rod —————— } 1—2
Without Lime, *per* Rod ——— ——— 0—3
Paving, digging the Stone, and all Workmanſhip, } 0—3
    per ſquare Foot ——— ——— ——— }

Prices of Stone and Urns.

Rough Paving 1 d. *per* Foot ; Rough Aſher, or Coping,
1d ½ *per* Foot ; Fine Aſher, 3d. *per* Foot ; Baſe *per* Foot 4d.
Carbe, *per* Foot, 6d. Urns 3 Feet high, 1l. 4 Feet high
1l. 10s. 5 Feet high, 2l. and 6 Feet, 3l.

Glaziers Work.

IT may be done thus ; Multiply the Length in Inches and
Parts, by the Breadth in Inches and Parts, and ſeparate
the Decimals (if any) as before ſhewn.

Example.

In. Pts.
A Piece of Glazing 29,5 long.
        and   7,0 broad.

        144) 206,50 (1,5   So the Contents is 1 f.
             144   5 and ⅙ of an Inch.

        12) 62 (5
             60

             (2).

Here, after the two Places are ſeparated by a Comma, the
Remainder is divided by 144, and then what remains by 12,
&c.   Or thus, as if Shillings and Pence.

                s. d.
                2—5 ¼

                ——— 7   F. I.
        12) 17—0 ¾ (1,5 ¼ *Anſwer.*

The Expeditious Way.

When the Length of any Superficies, either of Board or
Glaſs, is given in Feet, and the Breadth in Inches, then
only multiply the one by the other, and divide by 12,
and the Quotient will be the Anſwer in Feet, and the
Re-

Remainder will be the Parts of a Foot; as hath been ſpoken of before.

Example.

Admit a Window, to be 15 Feet long, and 12 Inches broad.
12 Inches broad.

<div align="center">

12) 180 (15 Feet Anſwer.

</div>

Of Board Meaſure.

WHENEVER the Breadth is given in Inches, and the Length of the Board in Feet, they only multiply one by the other, and divide the Product by 12, and the Quotient will be the Anſwer in ſquare Feet: But if the Breadth and Length be given both in Inches, then multiply one by the other, and divide by 144, and the Quotient will be the Anſwer in ſquare Feet.

Example 1.

Suppoſe a Board (or any other thing of flat Meaſure) be 15 Inches broad, and 16 Feet long, what is the Content in ſquare Feet?

| 192 Length in Inches. | 15 Breadth in Inches. |
| 15 Breadth in Inches. | 16 Length in Feet. |

144)2880 (20 Feet.
288

(0)

90
15

12) 240 (20 Feet.
240

Here the Example is wrought both Ways, as aboveſaid, and the Anſwers are both alike.

Example 2.

Suppoſe a Board be 8 Inches and ¼ in Breadth, and 16 Feet long; what is the Content in ſquare Feet? The Work follows.

8¼ Breadth
4 and by 4

33
4

12) 132

In this Example, I multiply by 4 and 4, the component Parts of the Ratio's of 16 the Length.

Anſwer. 11 Feet.

<div align="right">

Example

</div>

Example 3.

Again admit a Board 17 Inches ¾ broad, and 28 Feet long, what is the Content?

$17\frac{3}{4}$
7 and 4

This Example is multiplied by 7 and 4, the Ratio's of 28 the Length.

$124\frac{1}{4}$
4

12) 497

Answer 41 Feet $\frac{5}{12}$.

Once more by the other Way. Suppose a Board be 32 Inches broad, and 37 Feet, or 444 Inches in Length; what is the Content?   4 and 8 Breadth.

1776
8

144) 14208 (98 Feet and $\frac{2}{3}$
1296

1248
1152

(96)

The Parts of a Superficial Foot is 144 *square Inches.*
Inches.

   72 half a Foot.
  108 three Quarters.
  126 three Quarters and half a Quarter.
   36 a Quarter of a Foot.
   18 half a Quarter.

In the last Work, I multiply 444, the Inches of the Length, by 4 and 8, the component Parts of 32, the Inches of the Breadth; and then divide the last Product by 144, and the Answer is 98 Feet, and 96 square Inches remain, which is two Thirds of a Foot.

Mr. *Darling*, in his Treatise of the *Carpenter's Rule*, hath with great Pains (and no doubt with as great Care) given a great many Tables for the Answer of sundry Dimensions in Board and Timber Measure; but he measures best, that doth it experimentally by Arithmetick, by those short and easy

Rules

Rules before and hereafter mentioned, and take not Things upon truſt : for tho' Tables may be right, ſo perhaps they may be alſo wrong (for Error is endleſs) and then to be wholly guided by ſuch Tables, it would be of ſad and very pernicious Conſequence ; and if the Artiſt is ignorant of Arithmetick, he will be bewildered and plunged into inextricable Difficulties.——I muſt confeſs that Tables are of conſiderable Help in caſe of Expedition ; but then you muſt be very well acquainted with them ; otherwiſe I can in much leſs time caſt up the Dimenſions, than you ſhall be in finding out your ſeveral Numbers, and adding or ſubſtracting them, &c. No Man that is wiſe, ought to depend upon any Table for his Government, till he hath proved the Truth of every Line, and he that is able to do that, is capable of making any Table for his own Uſe ; which if he takes care that it be correct, he is well provided, and need not be led into Error or Confuſion by falſe Tables.

Of Land Meaſure.

LAND is uſually meaſured by the Acre ; the Dimenſions are taken with a Pole of 16 Feet and a Half; or a Chain called Gunter's Chain, conſiſting of 4 Poles in Length, and is divided into 100 equal Parts, called Links, anſwering to Decimal Arithmetick.

Note, 1 Acre contains 160 *ſquare Poles* ; 1 *Rod or Quarter of an Acre,* 40 *ſquare Poles.*

Note alſo, *In any Number of Chains are ſo many* 100 *Links, as* 4 *Chains are* 400 *Links, and* 6 *Chains* 600 *Links,* &c. *In a ſquare Chain are* 16 *ſquare Poles ; and if you divide* 160 *(the ſquare Poles in one Acre) by* 16 *(the ſquare Poles in a Chain) the Quotient is* 10, *the ſquare Chains in* 1 *Acre.*

A ſquare Chain contains 10,000 *ſquare Links, (or* 100 *multiplied by* 100*) and conſequently* 1 *Acre contains* 100,000 *ſquare Links.*

To meaſure a Geometrical, or True Square.

A Square is contained under 4 Equal Sides, and 4 Right Angles.

Let Figure 7, repreſent a ſquare Piece of Land to be meaſured, every Side whereof is 20 Poles ; multiply 20 by 20, being both the Length and Breadth, and the Product
. is

is 400, for the Content in square Poles, which divide by 160 (the square Poles in 1 Acre) and the Remainder 80 by 40 (the square Poles in a Rod) quotes 2 Acres, and 2 Rods for the Content, as in the Operation.

$$
\begin{array}{l}
20 \\
20 \\
\hline
18|0\ 40|0(2\ \text{Acres,} \\
\quad 32 \\
\hline
4|0)8|0(2\ \text{Rods.} \\
\quad 80 \\
\hline
\quad (0)
\end{array}
$$

Note, *The square Root of the Area of any Square is the Side thereof*; as in Fig. 7. *the Area or Content is* 400, *whose square Root is* 20, *the Side of the Square.*

To measure a Parallelogram, or Long Square.

A Parallelogram, is contained under 4 Right-angles, but not 4 equal Sides; yet the opposite Sides are equal.

Admit Figure 8, to be a Parallelogram, or Long-Square, whose Length is 21 Chains, 36 Links, and Breadth 11 Chains, 64 Links; what is the Content of that Piece of Land?

The method of casting up the Contents of any Dimensions taken with Gunter's Chain, is to multiply the Chains and Links together, and cutting off 5 Figures towards the Right-hand, the Remainder on the Left-hand will be Acres; then multiply those Figures towards the Right-hand by 4, and from that Product cut off 5 Figures as before; so will the Figure on the Left-hand be Rods: Again, multiply the Remainder last cut off by 40, cutting off also from the Product 5 Figures to the Right-hand, and the Figures towards the Left-hand will be Poles; and if there be any Remainder it will be Decimal Parts of a Pole. So in the present Example, the Answer is 24 Acres, 3 Rods, 18 Poles, and $\frac{864}{10000}$ Parts of a Pole.

21,36

```
              21,36 Length.
              11,64 Breadth.
              ─────
               8544
              12816
               2136
               2136
         ─────────────
  Acres 24|86304
                 4
         ─────────────
  Rods  3|45216
                40
         ─────────────
  Poles 18|08640
```

To measure a Rhombus.

A Rhombus or Diamond like Figure, is contained under 4 equal Sides, but not Right-Angles; yet the opposite Angles are equal.

Admit Figure 9 to be a Rhombus, whose Side is 16, and Perpendicular 14; which multiplied together, the Product is 224, for the Area.

To measure a Rhomboides.

A Rhomboides is contained under 4 Lines, whose opposite Sides are equal, and opposite Angles equal; yet not all equal Sides, nor any Right-Angles.

Admit Figure 10, to be a Rhomboides, whose Length is 22, and perpendicular, or parallel Distance, 8, which multiplied together, the Product is 176, for the Area.

To measure any Manner of Triangle.

Every Triangle is half that Long-square, whose Length and Breadth is equal to the Perpendicular and Base. Therefore from the greatest Angle, draw a Line perpendicular to the Base, which multiply by half the Base, and the Product is the Area.

Admit Figure 11 to be a Triangle, whose Base or longest Side is 26 Poles, and the Perpendicular 16 Poles, which
multiply

multiply together, and the Product is 416, for the Area of the Long-ſquare *EFCB*, half of which is 208, the Area of the Triangle *ABC*.

Or if you multiply the Baſe 26, by 8 the half Perpendicular, the Product is 208, the Area as before.

Or elſe multiply half the Baſe 13, by the whole Perpendicular 16, the Product is 208 as before.

To meaſure a Trapezium.

A Trapezium is contained under 4 unequal Sides, and 4 unequal Angles.

Admit Figure 12 repreſent a Field; to meaſure which draw the Diagonal *DB*; ſo is the Figure divided into two Triangles, which you may meaſure according to the laſt Example, by letting Perpendiculars fall from the Angles *A* and *C*, upon the Diagonal *DB*, which will be the Baſe Line to each Triangle.

But with more Brevity, you may add the two Perpendiculars together, and multiply the Sum of them by half the Baſe, and the Product will be the Area of the Trapezium.

Suppoſe the Sum of the 2 Perpendiculars in 22 Poles, and half the Baſe is 14 Poles, which multiplied together, the Product is 308, the Area in ſquare Poles; or 1 Acre, 3 Rods, and 28 Poles.

To meaſure any irregular Piece of Land.

Firſt take care that the whole Plot be divided into Trapeziums and Triangles, according to your own Fancy, and the Nature of the Thing will bear; then meaſure thoſe Trapeziums and Triangles, as is before directed, and add the ſeveral Contents together; ſo will the Sum be the Content of that irregular Figure.

Admit Figure 13 repreſent a Field to be meaſured, which is divided into one Trapezium, and two Triangles, as the Figure directs.

Now to find the Content of this Figure, meaſure the Trapezium and Triangles as before directed, and add them together as followeth.

$$
\begin{array}{lr}
\text{Trapezium } \textit{FBCE} & 234 \\
\text{Triangle.} \left\{ \begin{array}{l} \textit{ABF} \\ \textit{ECD} \end{array} \right. & \begin{array}{r} 69 \\ 46 \end{array}
\end{array}
$$

The Area of the Figure *ABCDEF*, 349 ſquare Poles.

K

Of a Circle.

Figure the Fourteenth.

A Circle is contained under one Line, called the Circumference or Periphery; as *ABC*. All right Lines drawn from the Center *E* to the Circumference, are equal, and called Radius's, or half Diameters; and the long Line through the Centre from *A* to *C*, is the Diameter.

To divide a Circle into 6 equal Parts, extend the Compasses to half the Diameter, as from *A* to the Centre *E*. and the Extent will do it.

Half the Semi-circle of the Circle, that is, half of the Half of the Circle, is called a Quadrant, or Quarter.

If the Diameter of a Circle be 7 Inches, or 7 Feet in Length; then is the Periphery or Compass 22 Inches, or 22 Feet about.

Example 1.

If the Compass of a Circle be 66 Feet, what is the Diameter?

Multiply 66 by 7, and divide the Product by 22, and the Quotient gives the Diameter.

```
        66
         7
    22) 462 (21 Feet, Anfwer:
        44
        ──
        22
        22
        ──
        (0)
```

Example 2.

If the Diameter be 21 Inches, what is the Circumference?

The Operation is juft the Reverfe, viz.

```
    21
    22
    ──
    42
    42
    ──
  7) 462
    ────
```

Inches 66 *Anfwer.*

If

If a Globe be 31 Inches $\frac{3}{7}$ in Compass, what is the Diameter?

Work'd Fractionally thus:

Say 7 times 1 is 7, and 3 the Numerator makes 10, o and carry 1; then 7 times three is 21, and 1 carried is 22: So the Product is 220 the Dividend; which divide by 22, agreeable to the Proportion before mentioned.

Example of Operation.

$$31 \; \tfrac{3}{7}$$
$$7$$

22) 220 (10 *Answer*, 10 Inches Diameter.

(o)

Example 3.

Contra. If a Circle be 10 Inches Diameter, what is the Circumference?

The Work.

$$22$$
$$10$$

7) 220

31 $\frac{3}{7}$ *Answer* and *Proof.*

To measure the superficial Content of a Circle, either in Inches or Feet.

Rule. Multiply half the Periphery or Compass, by half of the Diameter, and the Product will be the Content.

Example.

Admit a round Table to be 14 Inches Diameter, and 44 ditto in Compass; what's the superficial Content in square Inches?

22 half the Compass.
7 half the Diameter.

154 *Answer.*

Or if the Diameter be squared or multiplied into itself, and that Product multiplied by 11, and the Result thereof divided by 14, gives the same Content.

Ex-

Example.   14 multiplied.

$$\begin{array}{r} \text{by } 14 \\ \hline \text{produces } 196 \end{array}$$

multiply by 11

$$\begin{array}{r} 196 \\ 196 \\ \hline \end{array}$$

divide by 43) 2156 (154 Quotient.

&c. as before.

Figure the Fifteenth.

To meafure half a Circle or round Table, *viz.*

Rule. Square the Semidiameter *C D*, and that Product multiply by 22, and divide by 14; fo the Anfwer is 77 fquare fuperficial Inches.   *Inches.*

$$\begin{array}{r} 7 \\ 7 \\ \hline 49 \\ 22 \\ \hline 98 \\ 98 \\ \hline \end{array}$$

14) 1078 (77

To meafure the Quarter or Quadrant of a Circle.

Rule. Multiply the Line *C E* into itfelf, and proceed as before; but multiply the firft Product by the Half of 22, *viz.* 11.

Decimally ought to be thus.

$$3\frac{1}{2}$$
$$3\frac{1}{2}$$

$$10\frac{1}{2}$$
$$1\frac{3}{4}$$

$$12\frac{1}{4}$$

By 11

14) 134¾ (9 In. 7⁄2·1·4
     126

&c.

3,5
3,5

12,25
11

1225
1225

14) 13475 (9,62½
     126

87
87

35
28

7   *The*

The Decimal Work produces $\left.\begin{array}{c} 9, \ 62 \\ \text{------} \\ 100 \end{array}\right\}$ equal to half an Inch, and $\frac{7}{14}$ or half of half an Inch.

the fame Anfwer as the other viz.

By thefe Methods may a Piece of Timber, that is half round, or a Quarter round, at the Bafe or End, be mea-fur'd; that is, by multiplying the fquare Inches at the End by the Inches of the Length.

Solid Meafure.

IS that which hath Length, Breadth, and Thicknefs, as Timber, Stone, and fuch like, which are meafured by the Foot; and herein you are to obferve, that a Foot of Timber or Stone, is accounted a Foot fquare every Way, in the Form of a Dye, which hath fix Sides.

The Rule for working is to multiply the Length and Breadth together, and that Product by the Depth or Thick-nef and the laft Product will be the Content in Cubick Inches which if Timber or Stone, divide by 1728, (the Cubick Inches in a folid Foot) and the Quotient gives the Content in folid Feet.

Example.

Admit Figure the 16th to reprefent a Solid in Form of a Cube; whofe Length, Breadth and Thicknefs, is 12 in-ches; multiply 12 by 12, and the Product is 144, which multiplied by 12, he Product is 1728, for the Content in cubick Inches: Hence it appears that a cubick Foot is 12 Times more than a fuperficial Foot; fo that a fuperficial Foot is 144 Inches, and a cubick Foot 1728 Inches.

The Dimenfions of Timber are confidered in Breadth, Thicknefs and Length; the Breadth and Thicknefs are commonly called the Square.

Note, The Parts of a Solid Foot, being 1728 Inches.

$$\left.\begin{array}{l} \text{Three Quarters} \\ \text{Half} \text{------} \\ \text{A Quarter} \text{---} \\ \text{Half a Quarter.} \end{array}\right\} \text{of a Foot is} \left\{\begin{array}{c} 1296 \\ 864 \\ 432 \\ 216 \end{array}\right\} \text{Inches.}$$

$$\left.\begin{array}{l} 40 \\ 50 \end{array}\right\} \text{Solid Feet of} \left\{\begin{array}{c} \text{round} \\ \text{hewn} \end{array}\right\} \text{Timber is a Tun or Load.}$$

Example.

Example.

If a Tree be 16 Feet long, and 18 Inches square, how many solid Feet doth it contain?

Multip. $\begin{cases} 18 \\ 18 \end{cases}$ $\begin{matrix} 16 \\ 12 \end{matrix}$

    324   192 the Length in Inches.
             324 Breadth and Thick-
                nefs.
             768
             384
             576

1728) 62208 (36 Feet.
      5184

      10368

      (0)

Decimally.	By Practice.

Square $\begin{cases} 1,5 \\ 1,5 \end{cases}$ 1—6
                       1—6

    225 Breadth   1—6
      16 Length   6 In. $\frac{1}{2}$ 9

   36,00 *Anfwer.*   2—3
                   4 and 4

               9—0

       Feet 36—0 *Anfwer.*

Example 2.

Suppofe there is given a Square Piece of Timber, whofe Breadth is 2,25, and Thicknefs 1,64 Feet, and Length 36,5 Feet, how many folid Feet are contained therein?

                                    2,25

             2,25 Breadth.
             1,64 Thicknefs.

             ———

             .900
            1350
             225
             ———

           3,6900
             36,5
             ———

          184500
          221400
          110700
          ———

 134,68500 *Anfwer*, 134 folid Feet.
          ———

Example.

Suppofe a Piece of Timber be 15 Inches fquare; that is, 15 Inches broad, and 15 Inches thick, and 16 Feet, or 192 Inches long; what is the Content of that Piece of Timber or Stone (or any other Thing that is to be meafured by cube or folid Meafure) in folid Feet?

             15 Broad.
             15 Thicknefs.
             ———

             75
             15
             ———

             225
             192   1728) 43200 (25 Feet:
             ———   3456..
                                  ———
             450   8640
            2025   8640
             225   ———
             ———
           43200 folid Inches.   (o)

So the Anfwer is 25 Feet of folid Timber in fuch a Piece or in fuch a Stone of fuch Dimenfions.————

Or if you multiply the Content of the Square by the Length in Feet, and divide that Product by 144, the Quotient will give the fame Content or Anfwer as before. See the following Work.

$$
\begin{array}{r}
15 \\
15 \\
\hline
225 \text{ the Square.} \\
16 \text{ the Length.} \\
\hline
\end{array}
$$

144) 3600 (25 solid Feet the Content.

A second Example in this, may be after the second Example in Board Measure. That is, suppose a Piece to be 8 Inches one Quarter Square, and the Length 192 Inches; what is the Content?

$$
\begin{array}{r}
1728) \ 13068 \ (7 \ \textit{Answer.} \\
12096 \\
\hline
972
\end{array}
$$

Answer, 7 Feet and half, and 108 cubic Inches.

Decimally.

8,25	-	68,0625 square Inches.
8,25		192 Length in Inches,
4125		1361250
1650		6125025
6600		680025
68,0625		13068,0000

Another Example. Suppose a Piece of Timber to be 17 Inches three Quarters Square, and 28 Foot long, what is the Content?

17 Inches three Quarters multiplied into itself Decimally, the Product will be 315,0625; which multiplied by the Length 336, the Product will be 105861, cutting off the four Cyphers, and the Answer will be 61 Feet, and 453 remains, being four Fourth of a Foot, and 21 Inches.

In superficial or flat Measure, having the Breadth of a Board, or Piece of Glass given, to find what Quantity in Length it will take to make a Foot square.

Rule. Only make the Breadth in Inches Divisor to 144, the square Inches in a superficial Foot, and the Quotient will be the Length in Inches that will make a Foot.

Example.

If a Board be 8 Inches broad, what Length of that Board (or Piece of Glass) will make a Foot?

8) 144

8) 144

Anſwer, 18 Inches, or 1 Foot and a Half.

Again. If a Board be 16 Inches broad, what Length of it will make a Foot?

16) 144 (9 Inches. *Anſwer,* 9 Inches.

This Method is manifeſtly true, from this Obſervation; that a Board a Foot, or 12 Inches broad, will require a Foot, or 12 Inches in Length, to make it exactly ſquare, or 144 Inches. And this is known without Operation. By this Method, may a Table of Board or Glaſs Meaſure be proved.

Likewiſe in ſolid Meaſure to know what Length of the Piece of Timber will make a Foot ſolid, you muſt make the Inches ſquare Diviſor to 1728, (the ſquare Inches in a Foot ſolid) and the Quotient will be the Anſwer in Inches of Length, that will make a Foot ſolid.

Example.

If a Piece of Timber be 8 Inches ſquare, what Length of it will make a Foot?

$$64) \; 1728 \; (27$$
$$\underline{128}$$
$$448$$
$$\underline{448}$$
$$(0)$$

Anſwer, 27 Inches, or 2 Feet three Inches in Length.

Here the Square of 8 is 64, &c.

Again. Suppoſe a Piece be 18 Inches ſquare, what Length will make a Foot? *Anſwer,* 5 Inches and one Third.
The Square of 18 is 324) 1728 (5 $\frac{108}{324}$ equal to $\frac{1}{3}$.
$$\underline{1620}$$
$$(108)$$

Once more: Admit a Piece of Timber be 2 Feet, 2 Inches ſquare, *i. e.* 26 Inches ſquare, which is, &c.
$$676) \; 1728 \; (2 \; \text{Inches} \; \tfrac{376}{676} \; \text{or} \; \tfrac{1}{2} \; Anſwer. |$$
$$\underline{1352}$$
$$(376)$$

So if a Piece be 10 Inches ſquare, the Anſwer will be, that

K 5

17

17 Inches and $\frac{28}{100}$ of an Inch is required for the Length.
And thus may a Table of fquare Timber be proved.

In meafuring of round Timber, the common Way is to
take $\frac{1}{4}$ of the Circumference for the true Square, but it is
erroneous, and gives Solidity fomewhat lefs than the true
Content: But the true Way is to multiply half the Dia-
meter by half the Compafs, and then that Product multiply
by the Length, which divide by 1728, and the Quotient is
the Content. If you cannot come to meafure the End of the
Piece, you may know the Dia-
meter by this Proportion, *viz.*
as 22 is to 7, fo is the Compafs
to the Diameter. Or you may
find the Square of a round Piece
of Timber by this Rule, *viz.*
multiply 3182 by the Inches of
the Compafs, and cut off 4 Fi-
gures to the Right-hand.

$$\begin{array}{r} 3182 \\ \text{In} \quad 66 \text{ the Compafs.} \\ \hline 19092 \\ 19092 \\ \hline 21|0012 \quad \textit{Anf.} \text{ 21 In.} \\ \hline \text{and } \frac{0012}{10000} \\ 10000 \end{array}$$

Having the Breadth and Depth of a Piece of Timber or
Stone, to know how much in Length of it will make a folid
Foot; multiply one by the other, and let it be a Divifor
to 1728, thus:

> *Inches.*
> 24 broad.
> 18 thick.
>
> 192
> 24
> ————
> 432) 1728 (4 Inches in Length, *Anfwer.*
> 1728

And thus you may make a Table to ferve all Breadths
and Depths, by which much Labour may be faved in mul-
tiplying and dividing, and yet meafure any Piece of Tim-
ber thereby very exactly.

The ufual Way of tapering Timber, is by this Method,
viz. take the Dimenfions in the Middle, and multiply that
by the Length; which, though fomewhat falfe, yet, if
done at feveral Lengths, as at every 5 or 6 Feet, it will
be very near.

Digging

Digging.

IS meafured by the folid Yard of 27 Feet; that is, 3 times 3 is 9, and 3 times 9 is 27; by which are meafured Vaults, Cellars, Clay for Bricks, &c. Other Things are meafured by the Flore of 324 folid Feet.

Example.

If a Vault or Cellar be digged 9 Feet deep, 4 Feet $\frac{1}{2}$ long, and 3 Feet 9 Inches broad; what is its Content in folid Yards?

$$
\begin{array}{r}
Feet. \\
4\ \tfrac{1}{2}\ \text{long.} \\
9\ \text{deep.} \\
\hline
40\ \tfrac{1}{2} \\
3\ F.\ 9\ \text{broad.} \\
\hline
121\ \tfrac{1}{2} \\
20\ \tfrac{1}{4} \\
10 \\
\end{array}
$$

6 Inches $\frac{1}{4}$
3 $\frac{1}{2}$ of 6

27) 151 $\frac{3}{4}$ (5 Yards 16 Feet $\frac{3}{4}$.

(16)   Example 2.

How many Yards of Digging will there be in a Vault that is 25 F. 4 long. 15 F. 8 broad, and 7 F. $\frac{1}{2}$ deep. *per* 3 and 5 F. 8.

$$
\begin{array}{r}
76—0 \\
5 \\
\hline
380—0 \\
8—5\ \tfrac{1}{4} \\
8—5\ \tfrac{1}{4}\ F.\ \tfrac{1}{2}\ deep. \\
\hline
396\text{--}10\ \tfrac{1}{2} \\
7 \\
\hline
2778—1\ \tfrac{1}{2} \\
198—5\ \tfrac{1}{4} \\
\end{array}
$$

2 Inches $\frac{2}{3}$

$\frac{1}{2}$

$\frac{1}{2}$

27) 2976—6 $\frac{3}{4}$ (110 *Yards*, 6 *Feet* and 6 *Inches*,
                        $\frac{3}{4}$ *Anfwer.*

27

(6)   *Example*

Example 3.

There is a Mote that is 648 Feet long, 24 Feet broad, and 9 Feet deep; how many Flores?

$$
\begin{array}{r}
648 \text{ long} \\
24 \text{ broad} \\
\hline
2592 \\
1296 \\
\hline
15552 \\
9 \\
\hline
\end{array}
$$

divide by 324) 139968 (432 *Flores, Answer.*
&c.
(o)

Solid Bodies being frequently painted, it is necessary to know how to find their Superficiality. To find the Superficial Content of a Square, or many sided or round Pillar; multiply the Sum of the Sides or Circumference by the Height in Feet; and the Product divided by 9, the Quotien will be all square Yards.

Of a Globe.

Multiply the Circumference in Feet by itself, and then that Product by this Decimal ,0354, and this last Product will be the Content in Yards.

Note, A solid Yard square of Clay will make about 7 or 8oo Bricks; and the Price of making is 7 or 8s. *Sterling* a Thousand, 3 Bags (or Bushels) and half of Lime, and half a Load of Sand, to laying 1000 Bricks.

$$
\left.
\begin{array}{l}
500 \text{ Bricks} \\
1000 \text{ Plain Tiles}
\end{array}
\right\} \text{make a Load.}
$$

25 Bags 1 C. of Lime.

To measure a Pyramid.

IF a Piece of Timber be right-lined, having but one Base, which is square, and ends in a Point, it is called a Pyramid; the solid Content of which is found by multiplying the superficial Content or Area of the Base, by one third Part of the Length. Or one third Part of the Area of the Base, multiplied by the whole Length, gives the Content also.

Example.

Example.

Suppose Figure the 17th, represent a Pyramid to be measured, whose Breadth at the Base is 5 Feet, and the Length 15 Feet; what is the Content in solid Feet?

$$5 \left.\right\} \text{ Side of the Base.}$$
$$\underline{5}$$

25 Area of ditto.
5 ⅓ Part of the Length.

Answer   125 the Content in solid Feet.

To measure a Cone.

IF a Piece of Timber be right-lined, having Length, and only one Base, which is round, equally decreasing, and ends in a Point, it is called a Cone; the solid Content of which is found, by multiplying the Area of the Base, by one third Part of the Length; *where Note* (and likewise in the Pyramid) the true Length is from the Centre of the Base to the terminating Point.

Admit Figure the 18th, represent a Cone, whose Diameter at the Base is 5 Feet, and the Length 15 Feet; what is the solid Content?

$$5 \left.\right\} \text{ the Diameter.}$$
$$\underline{5}$$

25 the Square of do.
multiply by 11

divide by 14)275 (19 $\frac{9}{14}$
         5   ⅓ of the Length.

Answer 98 $\frac{3}{14}$ the solid Content.

This Method may serve for tapering Timber, or of any other Thing of the Shape represented in Figures 17 and 18.

The next necessary Qualification that I shall touch upon, to introduce a young Man into the Knowledge of Business, is to say something in Relation to the Art.

Of Gauging.

THERE is a near Sort of Kindred or Affinity between the Art of Measuring of Timber, and that of Gauging or Measuring of Liquors; for both are performed by cube or solid Measure, and therefore not improper closely to follow one another; For as often as there are found 1728 solid or cubick Inches in a Piece of Timber (of what form soever) so many solid Feet it is said to contain. So likewise in the Art of Gauging, so many Times as 282 (the solid Inches in a Beer, or Ale Gallon) are found in any Vessel of such Liquor, so many Gallons is such a Vessel said to hold. And so of Wine; but in that the Divisor alters, it being 231 solid or cubic Inches.

And the Gallon of Dry Measure, contains $272\frac{1}{4}$ cubical Inches.

Note, *Every cubical Foot in Beer or Ale Measure, contains 6 Gallons, and almost a Pint.*
The same in Wine Measure, is 7 Gallons, 2 Quarts, and almost a Pint.

A cubical Foot of dry Measure contains 6 Gallons, and somewhat above half a Gallon.

For 141 Inches make 2 Quarts of Beer or Ale; 70 Inches $\frac{1}{2}$ one Quart, and 35 Inches $\frac{1}{4}$ a Pint.

To find the Content of any Vessel that hath the Form of a Cube, that is, a Figure whose Breadth, Depth, and Length, are all equal, and is very well represented by the Shape of a Dye commonly play'd withal.

Rule, Multiply the Side into itself, and then again that Product by the Side; which last Product, if for Beer or Ale, divide by 282, the Inches in a Beer or Ale Gallon; and for Wine, Brandy, &c. by 231, the cubical square Inches contained in a Wine Gallon.

Example.

Suppose a Cube, whose Side is 79 Inches, I demand the solid Content in Beer and Wine Gallons?

```
      79        282) 493039 (1748 Beer or Ale Gal.
      79             282 . . .
     ───          ──────
     711            2110
     553            1974
    ────           ─────                    Wine G.
    6241            1363 ·        231) 493039 (2134
      79            1128              462 . . .
   ─────           ─────             ─────
   56169           2359              310
   43687           2256              231
  ──────                            ────
  493039 Cube Inches. (103)         793
                                    693
                                   ─────
                                    1009
                                     924
                                    ────
                                    (85)
```

To find the Content of a Parallelopipedon, which is a Figure contained under 6 Sides, of which the Opposites are parallel, and of the Form of Figure the 19th.

Rule, Multiply the Length by the Breadth, and that Product by the Depth; and then divide by 282 for Beer or Ale, and 231 for Wine. *Example.*

Admit the Length of a Cistern to be 95 Inches; and the Breadth 62 Inches, and the Depth 23 Inches; what is the Content in Beer and Wine Gallons?

```
                                      95 Length.
                                      62 Breadth.
                                     ────
231) 135470 (586 Wine Gallons.       190
     1155                            570
    ─────                           ─────
     1997                           5890
     &c.                              23 Depth.
Rem. (104).                        ──────
                                   17670
                                   11780
                                  ───────
                       282)135470 (480 Beer Gals.
                           1128
                           &c.
                          ─────
                       Rem. (110)                    To
```

To Gauge a Back, or Square Tun.

Example.

Suppoſe its Length 112 Inches, Breadth 72 Inches, and its Depth 48 Inches; what is its Content in ſolid Inches, and alſo in Beer Gallons?

```
    112 Length.          282)387072 (1372 Gal. Anſ.
     72 Breadth.              282

    224                      1050
    784                       846

   8064                      2047
     48 Depth.               1974

  64512                       732
  32256                       564
```

387072 ſolid Inches.   (168)

To bring theſe Gallons into Barrels divide them by 36, the Gallons in a Barrel of Beer, thus.

```
36) 1372 (38        Anſwer, 38 Barrels and 4/8
    108 .           or 1/9 of a Barrel; and as for
                    the Remainder 168, it is
    292             ſomething above half a
    288             Gallon.
```

(4)

To find the Content of any Right Cylinder in Gallons; that is, to compute the Content of any round Tun, Tub, &c. whoſe Diameters at Top and Bottom are equal, and at Right Angles with its Sides.

Rule, Square the Diameter, which Product multiply always by 11, and divide the Product by 14, and the Quotient will give the Content of the Tub at one Inch deep; then multiply the Quotient by the perpendicular Height of the Caſk, and the Product is the Content in ſolid Inches.

Example.

Let Figure the 20th, repreſent a round Tub, whoſe Diameter is 72 Inches, and the Height 56 Inches, what is the Content in Beer Gallons?

72

```
        72
        72
       ───
       144
       504
      ─────
      5184  the Square of the mean Diameter.
        11
      ─────
14)  57024              (4073
     56 · · ·             56  the Length.
     ─────              ──────
     102                 24438
      98                 20365
     ────              ───────
      44                228088  solid Inches.
      42
     ────
      (2)
```

The aforesaid solid Inches brought into Gallons, make
808, and 232 solid Inches remain something above three
Quarters of a Gallon; in all 22 Barrels, 10 Gallons, and
¾ of Beer.

*To find the Content of any round Tun, or Tub, whose Diameters
at Top and Bottom are parallel, but unequal.*

Rule, First square the two Diameters, then multiply the
greater Diameter by the lesser, and to the Product add the
two former Squares; multiply the Sum of these three by ⅓
of the Depth, and divide the Product by 359 for Beer
Gallons, or by 294 for Wine Gallons.

Example.

Suppose the Diameter at the Top be 30 Inches, the Dia-
meter at the Bottom 36 Inches, and the Depth 24 Inches,
what is the Content in Beer Gallons?

The

The Square of 30 is ———— 900
The Square of 26 is ———— 676
30 multiplied by 26 ———— 780
———
The Sum is   ————   2356
multiply by ⅓ of the Depth   8
———

divide by 359) 18848 (52 Gallons and ½.
            1795
            ———
             898
             718
            ———
             180

To gauge a Butt, Pipe, Hogshead, Barrel or any other close Cask.

In order to perform this difficult Part of Gauging, the three following Dimensions of the proposed Cask must be truly taken in Inches, and decimal Parts of an Inch, *viz.*

1. The Diameter at the Bung within the Cask.

2. Either of the Head Diameters, supposing them both equal.

3. The Length of the Cask within.

In taking of these Dimensions, it must be carefully observed, that the Bung-hole be in the Middle of the Cask; and that the Heads of the Cask are equal and truly circular; if so, the Distance between the Inside of the Chine, and the Outside of its opposite Staff, will be the Head Diameter within the Cask, very near.

Having taken the Dimensions, the next Thing is to find such a mean Diameter, as will reduce the proposed Cask to a Cylinder, which may be found by the following Rules.

Subtract the Head Diameter from the Bung Diameter, and multiply the Difference by 0,7, or by 0,65, or by 0,6, or by 0,55, according as the Staves are more or less arching; add the Product to the Head Diameter, and the Sum will be the mean Diameter required.

Note, These first of the four Rules, (*viz.* 0,7) is commonly used amongst Gaugers for all Sorts of Casks, but there are very few Casks that will contain quite so much as this Rule will make it. But if the second and third of these Rules

(*viz.*

(viz. 0,65 and 0,6) be duly applied, they will answer very near amongst the common Sort of English made Casks; and the fourth Rule *(viz.* 0,55) will come pretty near the Truth in computing the Contents of Casks whose Staves are almost strait betwixt the Head and the Bung, *viz.* such as Wine Pipes, &c.

Having found the mean Diameter, the Content of the Cask may be computed by either of the two following Rules.

Rule 1. Multiply the Square of the mean Diameter by the Length of the Cask, and divide the Product by 359 for Beer Gallons, or by 294 for Wine Gallons. Or thus,

Rule 2. Multiply the Square of the mean Diameter by 11, and divide the Product by 14 : then multiply the Quotient by the Length of the Cask, and divide the Product by 282, for Beer Gallons ; or by 231 for Wine Gallons.

Example.

Admit Figure 20, represents a Hogshead to be gauged, whose Bung Diameter is 31,5, Head Diameter 24,5 and its Lengths 42 Inches, what is the Content in Beer and Wine Gallons.

Diameter at the	Bung 31,5
	Head 24,5

The Difference multiply by	7,0
	,65

add	4,55
	24,5

the mean Diameter,	29,05
	29,05

the Square 143,9025
the Length 42

359)35443,905(98,729
3231, &c. *Answer*, 98 Beer Gallons and
$\frac{729}{1000}$ of a Gallon.

(,294)

294)35443,905(120,557
294, &c. *Answer*, 120 Wine Gallons,
and $\frac{557}{1000}$ of a Gallon.

(147)

Or

Or thus by the second Rule.

the Square 843,9025
multiply by　　11

Divide by 14)9282,9275 (663,066
　　　84, &c.　　　　42
　───────
　　　282) 27848,772 (98,754
　　　　2538, &c.　　Beer Gallons.
　　　────────
　　　　　(,144)

　　　231)27848,772 (120,557
　　　　231, &c.　　Wine Gallons.
　　　────────
　　　　　(,105)

*To find the Quantity of Liquor remaining in a spheroidical
　Cask standing on its Head.*

From the Area of the Bung Diameter, substract the Area
of the Head Diameter, and multiply the Remainder by the
Square of the Difference between the wet Inches and the
Semi-length, and this Product divide by the tripple Square
of the half Length, and substract the Quotient from the
Area of the Bung Diameter; then multiply the Remain-
der by the Difference between the wet Inches and the Semi-
length, and the Product will be how much Liquor is con-
tained in the Vessel above, or under its half Contents.

Example.

Suppose
$\begin{cases} \text{the Bung} \longrightarrow & 40,8 \\ \text{the Heads} \longrightarrow & 35,3 \\ \text{the Length} \longrightarrow & 61,8 \\ \text{the Wet Inches} & 41,9 \end{cases}$
what is the Content
in Beer Gallons?

61,8

```
61,8 the Length                        11
30,9 the half Length                   11

41,9 the wet Inches             are 121
30,9 the half Length.

11,0 the Difference.
    Area of the Bung Diameter      4,6362
    Ditto of the Head Diameter     3,4705 fub.

                                   1,1657
    The Square of the Difference    121

                                   11657
                                   23314
                                   11657
```

The triple Square of the ½ Length 2865) 141,0479(492
                                        11460 ‥

```
   30,9     4,6362 Area of the Bung 26449
   30,9  fub.  492 the Quotient      25785

   2781       45870                   6647
   9270         11                    5730

 954,81      50,4570                  (917)
     3
```

2864,43
  131,25 the half Content of the Veffel.
   50,45 the Liquor qt. above the half Content.
  181,70 the Quantity of Liquor qt. in the Veffel.

To gauge any Thing that hath the Shape of a wooden Hand-Bowl, as the Bottom of a round Copper, &c.

Admit the Bowl to be full of Water; the firft Thing is to meafure the Surface of the Water; that is done by multiplying half the Circumference by half the Diameter, and that gives the Content in fuperficial fquare Inches. Then find the Depth of the Water in different Places; then add thofe different Depths together, and divide the Total by the Number of Depths that you take, and the Quotient gives the mean Depth: When you have found the mean Depth, multiply

multiply it by the Number of Inches that you found on the Surface of the Water, and the Product gives the folid Square Inches, which reduce to Gallons, as taught before.

Example.

Suppofe the Circumference be 120 Inches, the half of which is 60 Inches, and the Diameter admit to be 60 Inches, the half of which is 30 Inches; and fuppofe the feveral Depths to be 7, 8, 9 and 10, which put together make 34 Inches; which divide by 4, the Number of Depths, quotes the mean Depth, *viz.* 8 ½

```
        60
        30
      ————
      1800
        8½
      ————
     14400
       900
```

231) 15300 (66 *Anfwer*, 66 Wine Gallons, 3 Gal.
  1386   above a Hhd.

```
   1440      282) 15300 (and 54 Beer Gallons, or
   1386           1410              a Hhd.
   ————          ————
    (4)          1209
                 1128
                 ————
                 (72)
```

Some Ufes of the Square and Cube Roots.

Rule.   THE Root of the Product of any given Number, is the mean Proportional fought; fo the mean Proportional between 16 and 64, will be 32; this is of good Ufe in finding the Side of a Square equal to any Parellelogram, Rhombus, Rhomboides, Triangle, or regular Polygon.

2. *To find the Side of a Square equal to the Area of a given Superficies.*

Rule. The fquare Root of the Content of any given Superficies is the Side of the Square.—So if the Content of a given Circle be 160, the Side of the Square equal will be $12\frac{6}{49}$, or in Decimals 12,649.

3. *The*

3. *The Area of a Circle being given, to find the Periphery.*
Rule. Say as 113 to 1420, or 1 to 12,56637 ; so is the Area to the Square of the Periphery—So if the Area of a Circle be 160, the Periphery will be found to be 44,84.

4. *The Area of a Circle being given, to find the Diameter.*
Rule. As 355 to 452, or as 1 to 1,273239, so is the Area to the Square of the Diameter.

5. *Any two Sides of a Right Angled Triangle being given, to find the third Side.*

In this useful Problem lies hid a great Part of the Mathematicks ; it being asserted and proved, that the Square of the Hypothenuse, or longest Side of a Right Angled Triangle is equal to the Sum of the Squares of the Base and Perpendicular, that is, of the other two Sides.

Example by the Adjacent Figure.
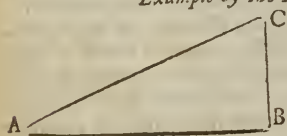
Let the Base or Ground *A B* represent the Breadth of a Moat or Ditch, and the Perpendicular *B C* represent the Height of a Castle, Tower, or City-Wall ; and the Hypothenuse, or Longest Side, represent the Length of a Scaling Ladder.

In this Figure, the Base *A B* is supposed to contain 40 Yards and the Perpendicular, or Height of the Tower or Wall, 30 Yards ; What Length will the Hypothenuse *AC*, or the Scaling Ladder, be ?

Rule. The Square Root of the Sum of the Squares of the Base and Perpendicular, is the Length of the Hypothenuse, as *per* Work.

    1600 the Square of the Base 40.
     900 the Square of the Perpendicular 30.

The Sum 2500 (50 Yards the Root or Length of the Scaling Ladder.

     25

     (0)

And if the Length of the Base, or Breadth of the Ditch, were required ; then the Square Root of the Difference of the Squares of the Hypothenuse and Perpendicular is the Length of the Base, or Breadth of the Ditch or Moat. Example *per* Work.

2500 the Square of the Hypothen, *A C*,
900 the Square of the Perpendicular *B C*.

The Differ. 1600 (40 Yards the Root, or Breadth of
    • •   the Ditch.
   16

   (o)

And if the Height of the Tower or Perpendicular *B C*
were required; then the Square Root of the Difference of
the Distance of the Square of the Hypothenuse and Base,
is the Height of the Perpendicular *B C*, representing a
Tower, a Wall, a Steeple, or any Thing else.

Again. Any Number of Men given to be formed into a
Square Battalia, to find the Number of Rank and File.

Rule. The Square Root of the Number of Men given,
will be the Number of Men to be placed in Rank and File.

Example. Admit an Army of 32400 Men were to be
formed into a Square Batalia; the square Root of 32400
will be found 180; and so many Men must be placed in
Rank and also in File.

The Uses of the Cube Root are to find out a Proportion
between like Solids, as Globes, Cylinders. Cubes, &c.

Example.

Suppose a Bullet of 8 Inches Diameter weigh 72 Pounds,
what will a Bullet weigh whose Diameter is 4 Inches?

Rule. Since like Solids are in tripple Proportion to their
Sides, Diameters, Lines, &c. it holds; as the Cube of the
Diameter given is to the Weight thereof, so is the Cube of
the Diameter sought to the Weight thereof; as per Work.

$$\begin{array}{ccc} C\,D & \text{℔.} & C\,D. \\ \text{If } 512 \text{———} 72 \text{———} 64 \end{array}$$
$$64$$
$$\overline{\hphantom{000}}$$
$$288$$
$$432$$
$$512)\,4608\,(9 \text{ Pounds.}$$
$$4608$$
$$\overline{\hphantom{000}}$$
$$(o)$$

Example

Example 2.

If a Ship of 100 Tons be 44 Feet long at the Keel, of what Length muſt the Keel be of a Ship that carries 220 Tons?

Say, as 100 is to the Cube of 44, that is, 85184; ſo is 220 to 187404,8; whoſe Cube Root is 57,225, the Length of the Keel ſought. *Example 3.*

There is a Cubical Veſſel whoſe Side is 12 Inches, and it is required to find the Side of a Veſſel that holds three Times as much. Here the Cube of 12 is 1728, which multiplied by ——————————————— 3

produces   5184
and the Cube Root of which is 17,306, the *Anſwer* required, or Side ſought.

An eaſy Rule to find the Length of the Maſts of a Ship, viz.

Two Thirds of the Length of the Keel, and the Breadth of the Beam, is the Length of the Main-maſt; and the Rule is therefore, to multiply the Length of the Keel by 2, and to divide the Product by 5, and then to the Quotient add the Breadth of the Beam, and the Total is the Length of the Main-maſt. *Example.*

Suppoſe a Ship to be 108 Feet by the Keel, and 40 Feet by the Beam, what is the Length of her Main-maſt?

$$108$$
$$2$$
$$\overline{3)\ 216}$$

Add $\left\{ \begin{array}{l} 72 \text{ two Thirds of the Keel.} \\ 42 \text{ the Breadth of the Beam.} \end{array} \right.$

Anſwer, $\overline{112}$

Anſwer, The Length of her Main-maſt is 112 Feet, as in the Work. *Again.*

Admit a Ship to be 84 Feet by the Keel, and 31 Feet by the Beam, what is the Length of her Main-maſt?

$$84 \text{ per Keel.}$$
$$2$$
$$\overline{3)\ 168}$$

Add $\left\{ \begin{array}{l} 56 \text{ two Thirds of the Keel.} \\ 31 \text{ the Breadth of the Beam.} \end{array} \right.$

Anſwer, 87 Feet, the Length of the Main-maſt.

L   If

If you divide firft by 3, and then multiply the Quotient by 2, it gives the two Thirds of any Thing as well as the other Way.

Another Way to find the Length and Thickness of Masts in Yards, viz.

The Way to find the Length of the Main-Maft, is to add the Breadth of the Beam, and the Depth of the Hold together, and divide the Total by 1, 5, and the Quotient will be the Length of the Main-Maft in Yards.

Example.

Admit a Ship whofe Keel in Length is 73 Feet, and the Breadth of the Beam 28,5 Feet, and the Depth of the Hold 12 Feet, what is the Length of the Main-Maft?

```
              Feet.
        28,5  Breadth of the Beam.
        12,0  Depth of the Hold.
        ────
 1,5) 40,5  27 Yards, Anfwer.
       30
      ────
      105
      105
      ────
      (o)
```

Anfwer, 27 Yards, or 81 Feet, as *per* Work.

Or if, inftead of dividing, you multiply by this Multiplier, *viz.* ,6666 and point of the Decimals, you will have the fame Anfwer.

Example.

```
      40,5    Here the Anfwer is 26
    ,6666    Yards and 98/100 of a Yard,
    ─────    not wanting one Second
    33330    to make it 27 Yards, as
   266640    before.
   ───────
   26,99730
```

I here multiply the under by the upper Number, to fave both Figures and Room.

To find the Thickness of the Maft, having the Length, fay, by the Rule of Proportion, (or Rule of Three) if 84 Feet long require 28 Inches thick, what 81 Feet long? as in the following Work.

F. I.

F. I.   In. thick.   F. I.
If 84————— 28 ————— 81.
                   81
                   ——
                  648
                  162
                  ——
84) 2268 (27 Inches thick, Answer.
         168 ·
         ——
         ——
         588
         588
         ——
         (0)

By *Trigonometry*, or the Doctrine of Triangles, or a Multitude of Questions solv'd, relating to sailing on the Seas; to give one Instance.

Suppose two Ships set Sail at one Time, from one Place, the one sailing directly East 48 Leagues, as from *C* to *B*; and the other directly North, from *C* to *A*, 36 Leagues; the Question is, how many Leagues are they distant or asunder one from the other?

48 multiplied by 48, produces ————— 2304
36 multiplied by 36, gives ——————— 1296
                                              ——
which two Numbers added, give for Total   3600 (60
the square Root of which is 60; and so
many Leagues are the two Ship's asunder or   36
distant one from the other.

Here the Distance of each Ship's sailing is squared, and their Squares added together, and Total is 3600; the square Root of which is 60, and the Answer to the Question, as in the Work.

And being here speaking something relating to Sea Affairs, it may not be improper to say something concerning the Mariner's Compass.

Before the Invention of this excellent and most useful Instrument, it was usual in long Voyages to sail by, or keep along the Coast, or at least to have it in Sight; as is manifest and plainly evident, by the Voyages of St. *Paul*, *Acts* xx, 12 and 27; which Course made their Voyages long,

L 2   and

and very dangerous, by being so near the Shore. But now, by the Help of a Needle touched by the Magnet or Load-stone, which by a wonderful and hidden Quality, inclines its Point always northerly, the ingenious Mariner is di-rected in his proper Course of Sailing, through the vast Ocean, and unfathomable Depths, to his intended Port: And if the Wind is favourable, can sail near 333 Leagues, or 1000 Miles in a Week, tho' in the darkest Weather, or darkest Night, when neither Land, Moon, nor Stars, are to be seen; which before, were the only Guide; and, if not seen, the Sailors were at a great Loss, and exposed to the most imminent Danger.

Behold the Figure or Representation of the said Com-pass, with the Cardinal and other Winds that followeth.
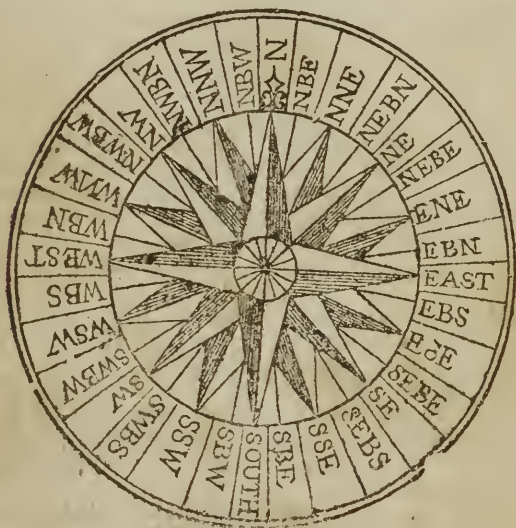
The Description.

1*st*, The Cardinal Points are, the *North, South, East,* and *West* Points of the Horizon. The Needle in the Center points with its principal End to the *Flower-de-luce,* and shews its Direction Northerly: And the said *Flower-de-luce* is also placed in Maps to the same intended Purpose.

2*dly,*

2*dly*, The Letters *N* by *E* on the Right of the said *Flower-de-luce*, signifies, and is to be read *North by East*; and the next after it *N N E.* that is *North North East*; and the next *N E* by *N.* to be read *North East by North*; and so round the Circumference, which Mariners usually have by Heart, particularly, the Pilot who guides the Ship accordingly; and sometimes he is helped by the Sight of the North Pole Star when on this Side the Equator; and by the South Pole, on the other Side.

The next Thing I shall proceed to, is to give the Sense and Meaning of some few Terms used in Dialing, Geography, &c.

A small Representation of the Globe.

The *Poles* of the Equinoctial (commonly called the Poles of the World) are two fixed Points in the Heavens, opposite one to the other; one pointing to the North, which is therefore called the North, or Artic Pole, marked with the Letters N. P. and the other pointing Southward, and therefore is called the South, or Antartic Pole, marked with S. P.

L 3

The

The *Axis* of the World, is a Line imagined to paſs through the Center of the Earth from one Pole to the other, as the Line N. P. S. P.

The *Equinoctial* in the Heavens, or Equator on the Earth, is an imaginary great Circle of the Sphere, which divides it into two equal Parts, to which the Sun apparently comes the 10th of *March* and 12th of *September*, and then makes equal Day and Night; it is noted by the Letters Æ. Q.

The *Ecliptick* is a great Circle interſecting the Equinoctial in two oppoſite Points, the Beginning of *Aries*, and the Beginning of *Libra*, and makes an Angle therewith of 23 Deg. 29 Min. repreſented by the Line ♋ ♑ : It is divided into 12 equal Parts called Signs, each containing 30 Deg. which are as follow.

Aries ♈			Libra ♎		
Taurus ♉			Scorpio ♏		
Gemini ♊	called	Sagitarius ♐	called
Cancer ♋	Northern	Capricornus ♑	Southern
Leo ♌	Signs.	Aquarius ♒	Signs.
Virgo ♍			Pisces ♓		

The *Zodiack* is a Zone or Girdle, having about 9 Degrees in Breadth on each Side of the Ecliptick, and limits the Latitudes of the Planets in their Revolutions.

The *Meridian*, from Meridies, Noon, or Mid-day, is a Circle paſſing through the Poles of the World, exactly in the Middle between the Eaſt and Weſt; to which when the Sun comes every Day it is Noon. The Stars are alſo ſaid to be South, when they are upon the Meridian.

The *Tropicks* are two Circles parallel to the Equinoctial, and 23 Deg. 29 Min. diſtant therefrom, being the Bounds of the Sun's greateſt Declination North and South. The North Tropick is marked with ♋ C, called the Tropick of Cancer; and the South Tropick with B ♑, called the Tropick of Capricorn.

The *Zenith* or Vertex, is an imaginary Point in the Heavens directly over our Heads, as Z.

The *Nadir* is the Point oppoſite to the Zenith, and directly under our Feet, as N.

The *Horizon* is a great Circle 90 Deg. diſtant from the Zenith and Nadir, which encompaſſes the Earth exactly in the Middle, and appears to every One ſtanding in an open Plain, to divide the viſible from the inviſible Part of the Heavens. It determines the Riſing and Setting of the Sun, Moon, and Stars, in any particular Latitude; as H. O.

The Latitude in Geography, or on the Earth, is the Height of the Pole of the World above the Horizon, which is always equal to the Arch of the Meridian between the Zenith and Equinoctial.

Longitude on the Earth, is an Arch of the Equator, contained between the Meridian of the Place where the Longitude is affigned to begin, and the Meridian of any other Place, and is accounted Easterly and Westerly.

Every Circle circumfcribing the Earth, or Terreftrial Globe, is fuppofed to be divided into 360 equal Parts, called Degrees; each of which is accounted 60 Miles; and if you multiply 90 the Quadrant or Quarter of the Globe, by 60, the Product will be 5400, which multiplied by 4, gives 21600 Miles for the Circumference of the Earth and Sea.

The next Thing I shall proceed to, is to fay fomething in Relation to the Art of making Dials: But it may, and is very proper, to defcribe and fpeak of the Ufe of a very neceffary Inftrument called a *Quadrant*, the Shape of which is here reprefented.
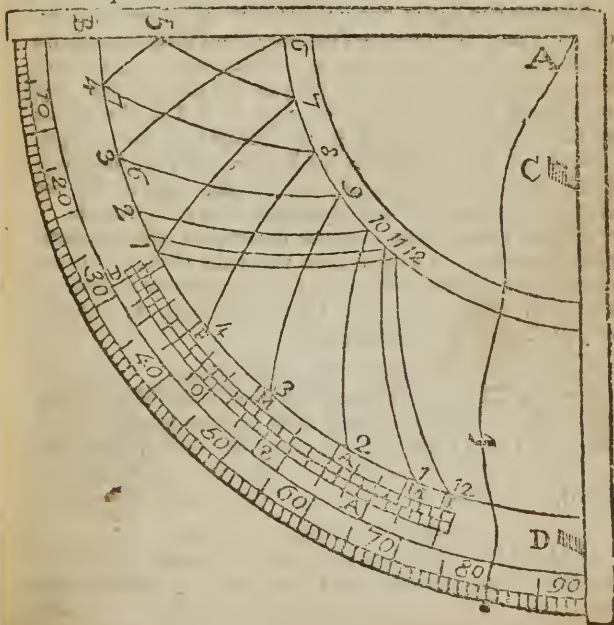
This Quadrant or Quarter of a Circle, is variously useful, on sundry Accounts, *viz.* To take Heights and Distances, whether accessible or inaccessible; to find the Hour of the Day, &c.

Its Description.

The outward Arch is divided into 90 Parts or Degrees, (being the fourth Part of the Circle of the Sphere) and figur'd from 10, 20, &c. to 90; above which Figures, are Letters signifying the 12 Calender Months of the Year, as *J.* for *January*, *F.* for *February*, &c. And again, over those Letters for the Months are Lines to know the Hour of the Day; And upon the Line *C D*, are Sights of thin Brass to be spied through, or for the Sun to shine through, from one to the other. Lastly, in the Middle, or Point of the Quadrant, *viz.* at *A*, is a Line or Thread of Silk fixed through a Hole, with a Plummet of Lead at the End of it, and also a small Bead in the Middle.

Some of the many Uses of this Instrument are as follow.

Of Heights.

Suppose you would know the Height of a Steeple, Tower, or Tree; hold up the Quadrant, and view through the Sights the Top of the Steeple, Tower, or Tree, and then step forwards or backwards, till you find the Plummet hang at Liberty just at 45 Degrees, that is, just in the Middle of the Quadrant; then is the Height of the Steeple, Tower, or Tree, equal to the Distance of your Standing-place from the Bottom of the Steeple, adding for the Height that you hold the Quadrant from the Ground.

If the Plummet intersect one Quarter of the Quadrant, or 22 Degrees and a Half, then twice the Distance of your Standing is the Height; and if three Quarters of the Quadrant, or 67 Degrees and a Half, then Half the Distance of your Standing is the Height.

To find the Hour of the Day.

Lay the Thread just upon the Day of the Month, then hold it till you slip the small Bead or Pins-head to rest on one of the 12 a Clock Lines; then let the Sun shine from the Sight at *C* to the other at *D*, the Plummet hanging at Liberty, the Bead will rest on the Hour Line of the Day.

To find the Latitude of a Place.

Hold up the Quadrant, and thro' the Sights thereof (or along the Edge) spy (in a clear Star light Night) the North-
Pole

Pole Star; the Plummet hanging at Liberty, the Thread will rest on the Degrees of Latitude of the Place you be in, or where you take your Observation. If at *London*, you will find it 51 Degrees and 32 Minutes. If at *Bristol*, 51 Degrees 27 Minutes. If at *York*, 53 Degrees 58 Minutes; and if at *Berwick*, 55 Degrees 54 Minutes, &c.

When it is said that such a Kingdom, Country, City, Town, or Place, lieth from 40 to 50 Degrees North Latitude, it is to be understood, that it lieth on the North Side of the Tropick of *Cancer*, or North Boundary of the Sun towards *England*, to which the Sun comes about the 10th or 11th of *June*, and makes our Days the longest. And about the 10th or 11th Day of *December*, the Sun enters the Tropick of *Capricorn*, its South Boundary, and is then the farthest from us, and makes our Days the shortest.

Of Dialling.

Dialling is a very ancient Art, even as old as the Time of King *Hezekiah*, where mention is made of the Dial of *Ahaz*, in the 2d Book of *Kings*, Chap. xx. Verse 11.

The Gnomon or Substile of a Post or Horizontal Dial, should point directly South, and its Back will be then directly North. The South may be truly known by a good Watch or Clock, just at Noon; for then the Sun is always at the Meridian; and makes just 10 o'Clock; so that knowing the South, it will not be difficult to find the North, it being its Opposite.

To fix a Dial North and South.

Fasten your Board on the Top of a Post, and then with your Compasses make 4, or 5, or 6, Circles, one within the other, from the Center or Middle, where place a large Pin perpendicular or upright, and nicely observe when the Sun shines in the Forenoon, on which Circle the Head of the Pin shadoweth; then there make a Mark; and do the same in the Afternoon, when the Shade of the Pin's Head comes on the same Circle; and from the Mid-way of the two Marks, draw a Line to the Center, on which place your Meridian or 12 o'Clock Line, so will the Post Dial point North and South.

By the Meridian Line, you may also know when the Moon, or a Star of Magnitude, comes to the South; which when they do, they are always at the highest, whether by Night or Day.

But

But to proceed to Dialing, the following Figure reprefents an Horizontal Dial, defcribed for the Latitude of New-York, at 41 deg. 44m. North.
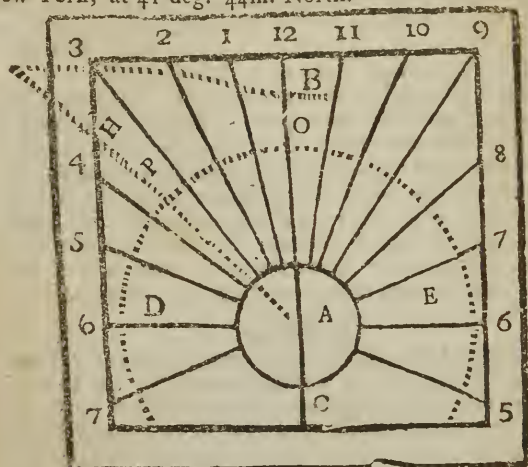
Firft, Draw the Meridian or 12 o'Clock Line *B A C*, and crofs the fame with the Line *D E*, at right Angles in the Point *A*, which muft be the Center of your Dial, and the Line *D E*, is the 6 o'Clock Line; then take with your Compaffes 60 Degrees from a Line of Chords, and with that Extent, fetting one Foot in the Center at *A*, with the other defcribe the Circle *DOE*, which done, take from the fame Line of Chords, all the Hour Arches in the following Table; and placing one Foot of your Compaffes in *O*, (where the Circle croffes the Meridian) with the other fet off the Hour Arches both Ways upon the Circle *D O E*.

Latitude 41 Degrees 44m. North.

Hours.		Hour.
Fore-noon.	After-noon.	Arches D. M.
11	1	9 46
10	2	20 22
9	3	32 44
8	4	48 4
7	5	67 22

Againft 1

Againſt 11 and 1, is 9 Degrees and 46 Minutes, which take with your Compaſs from the Line of Chords, and ſetting one Foot in the 12 o'Clock Line at O, with the other make a Mark in the Circle both Ways; then draw ſtreight Lines from the Center *A*, croſſing the Circle in thoſe two Marks, and you will have the true Hour Lines of 11 o'Clock in the Forenoon, and one in the Afternoon. Then to draw the Hour Lines of 10 and 2 o'Clock, look in the Table for 10 and 2 Hours, againſt which you will find 20 Degrees and 22 Minutes, which take from the Line of Chords, and mark as the other from the 12 o'Clock Line both Ways on the Circle. The ſame is to be done for 9 and 3 o'Clock; and alſo for 8 and 4 o'Clock; and the like for 7 and 5 o'Clock.

Note, *For 5 o'Clock in the Morning, and 7 in the Afternoon, which are below the 6 o'Clock Line, ſet off the ſame Diſtance as 5 and 7 above it.*

Laſtly, For the Height of the Gnomon or Stile, take from the Scale of Chords the Poles Elevation, which at *New-York,* is 41 Degrees 44m. and ſet that Diſtance from O to *P* on the Circle, then draw the dotted Line *A P H,* which ſhall repreſent the upper Edge or Height of the Stile to be erected over the 12 o'Clock Line, and ſo your Dial is finiſhed.

Of Upright Planes.

THOSE Planes are ſaid to be Erect or Upright which ſtand perpendicular to the Horizon of the Place, whoſe upper Part pointeth to the Zenith, and their lower Part to the Nadir; and ſuch are the Walls of Houſes, Churches, Steeples, &c. againſt which Dials are commonly made.

Of Upright or Erect Planes, there are two Sorts, *viz. Direct* and *Declining.*

How to draw the Hour-Lines on a Direct South Plane, in the Latitude of 41 *Degrees* 44m. *as deſcribed in the following Repreſentation.*
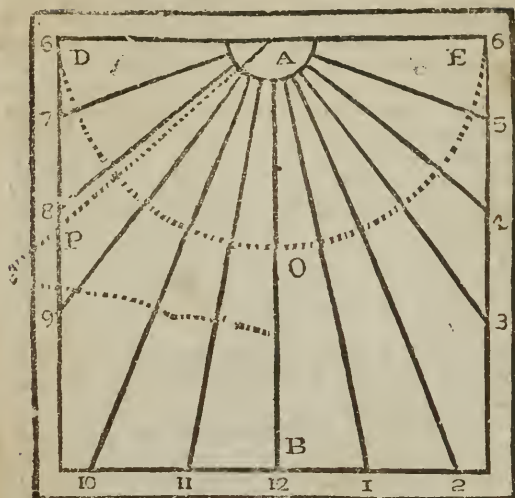
First,

First, draw the Meridian or 12 o'Clock-Line *A B*, and cross it with the Line *D E*, for the 6 o'Clock-Line, then with your Compasses take 60 Degrees from a Scale of Chords, and placing one Foot at *A*, (where the 6 o'Clock Line crosses the Meridian) with the other draw the Semi-Circle *D O E*.

Next for the Hour-Arches, you must take them out of the following Table, and project them into the Dial, after the same Manner as in the Horizontal, only in this you must insert but 12 Hours.

Latitude 40 Degrees North.

Hours.		Hours. Arches
Fore-noon.	After-noon.	D. M.
11	1	11 28
10	2	23 51½
9	3	52 33
8	4	37 00
7	5	19 17

Lastly,

Laſtly, for the Height of the Stile, take from the Scale of Chords 50 Degrees (the Compliment of the Pole's Elevation at *Philadelphia*) and ſetting that Diſtance from O to P, on the Semi-Circle, draw the dotted Line *APH*, which ſhall repreſent the Height of the Stile as in the Figure.

In making this Dial, you make two Dials; for the Erect Direct North Dial, is but the Back-ſide of the South; for as this beholdeth the South Part of the Meridian; ſo the other faceth the North Part of the Meridian; and as the Meridian Line in the South Dial ſhews when it is 12 a Clock at Noon, ſo the Back-ſide thereof, viz. the North-ſide, repreſents the Hour Line at 12 a Clock at Midnight, and therefore not expreſſed, nor the Hour-lines of 8, 9, 10, 11 at Night, or of 1, 2, 3, or 4 in the Morning, the Sun being never ſeen by us above the Horizon at thoſe Hours: So that the North Dial is capable of only receiving the Hours of 5, 6, and 7 in the Morning, and 5, 6, and 7 in the Afternoon, and (in this Latitude) not of all them neither, for it ſhines not in this Plane at 8 a Clock in the Morning, nor at 4 in the Afternoon.

An Erect Direct North Dial.

To draw Hour-lines on an Erect Direct Eaſt or Weſt Plane ———— Hour lines in theſe Dials muſt be parallel to one another, and the Dial not have any Center, but drawn as follows.

An Eaſt Direct Dial in Latitude 40 *Degrees.*

Let *ABCD* be the Dial Plane, on which is to be drawn a Direct Eaſt Dial, upon the Point *D*, if an Eaſt Dial; and on the Point *C*, if a Weſt. With the Radius (or 60 Degrees) of the Line of Chords, deſcribe the obſcure Arch *EF*; then from your Chords take 50 Degrees, the Compliment of the Latitude of the Place, and ſet them from *E* to *F*, and draw the Line *DF* quite thro' the Plane; then that you may proportion the Stile to the Plane, ſo that you may bring on all the Hours from Sun-riſing to 11 a Clock, aſſume two Points in the Line *FD*, one towards the End *D* (as the Point *G)* for the Hour Line of 11, and another at *H*, for the Hour Line of 6; and thro' the Points *G* and *H*, draw the Lines 11 *G* 11, and 6 *H* 6, then ſet one Foot of the Compaſſes at *I* (open'd to 60 Degrees) and deſcribe the obſcure Arch *I K*; from your ſcale of Chords take 15 Degrees, and ſet them from *I* to *K*. and draw the Line *G K*, extending it to the 6 a Clock Line in the Point *L*; ſo ſhall *L H* be of the Height of the Perpendicular Stile proportioned to this Plane.

For

For the drawing of the Hour-lines, set one Foot of the Compasses (opened to 60 Degrees of the Chords) in *L*, and with the other describe the Arch *M N*, between the Hour-line of 6, and the Line *G L* ; which divide into five equal Parts in the Points ☉ ☉ ☉ ☉ ☉ and a Ruler laid from the Point *L*, to each of these Points ☉ ☉ ☉, &c. will cut the Equinoctial Line *H I* in the Points ***** ; thro' which Points draw Lines parallel to 6 *H* 6, as the Lines 7 * 7, 8 * 8, &c. as may be seen in the Figure.

And thus you have made two Dials, viz. a West Dial as well as an East ; only the Arch *E F*, through which the Equinoctial passeth in the East Dial, is drawn on the Right-hand of the Plane ; but in the West it must be drawn on the Left ; and the Hour Lines 5, 6, 7, 8, 9, 10, and 11 in the Forenoon, on the East Dial, must be 7, 6, 5, 4, 3, 2, and 1 in the Afternoon, upon the West Dial, as in the Figure.

An Erect and Direct West Dial.
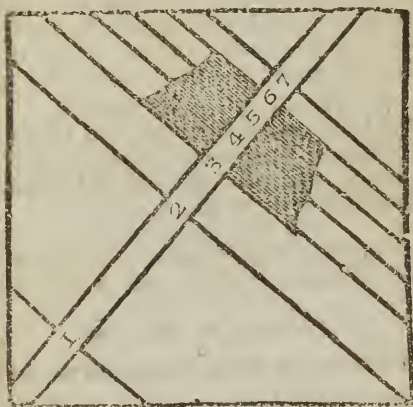
The Stile of the East or West-Dials, may be either a streight Pin of the just Length of the Line *HO* in the other Figure, which is equal to *HL* in the East-Dial fixed in the Point *H*, on the Hour Line of 6, and exactly perpendicular to the Plane, shewing the Hours by the Shadow of the Apex, or very near the Top thereof. Or it may be a Plate of Brass of the same Breadth with the Distance of the Hour-lines of
6 and

6 and 3 ; which Plate muſt be ſet perpendicular upon the Hour Line of 6, and ſo it will ſhew the Hour by the Sha-dow of the upperEdge thereof, as in the foregoing West Dial.

An eaſy Way how to fix a Dial North and South.

Fix a ſquare Piece of Board like a Trencher on the Top of a Poſt, and with your Compaſſes draw 4, 5 or 6 Circles, one within another from the Center ; in which Center fix a large Pin perpendicularly, and when the Sun ſhines in the Forenoon, note which Circle the Pin's Head ſhadeth, and there make a Mark : Do ſo in the Afternoon, when the Shadow of the Pin's Head comes on the ſame Line ; and from the Midway of thoſe two Marks, draw a Line to the Center ; upon which Line lay your 12 a Clock or Meridian-line of your Poſt Dial, becauſe it directly points North and South. Thus by this plain Way, without any other Inſtru-ment, find the Situation of your Dwelling, whether full North or South, or whether it declines East or West, &c.

Of Beautifying and Colouring Dials.

FIRST, the Boards are to be bruſhed over with Linſeed Oil, thinly ground with Spaniſh Brown done over 3 or 4 times (drying between each time) a little thicker each Time with the Colour ; and this is called *Priming*.

To make the Fat Oil for Dials.

Boil Red Lead, and Linſeed Oil, and a little Litherage of Gold (about a Pennyworth) together, till almoſt as thick as Syrup ; and when cold, and well ſettled, pour the cleareſt into a Bottle or Bladder for Uſe.

The Gold Size for Dials.

Mix fine ground yellow Oker with the aforeſaid fat Oil, to ſuch a Conſiſtency, as when uſed, it may ſettle ſmooth of itſelf.

A Mixture for Hour-Lines.

Grind Vermillion or Lamp-Black with the fat Oil.

To draw Golden Letters or Figures for the Hours.

Firſt draw them with a Pencil dipped in the Gold Size before mentioned ; which when ſo dry as juſt to ſtick to your Fingers, then with a ſmooth-edg'd Pen-knife ſhape your Leaf Gold to your Mind ; take it up with a Piece of Cot-ton Cloth fixt to the End of a Stick, and lay it on the Size, preſſing it down with the ſame Cotton, and when dry, bruſh off the looſe Gold with a Feather, and ſmooth the rough

Edges

dges of the Letters with a Pencil dipped in red or black
Colour.

Of the Dial Plane.

Let the Board be of the beſt ſeaſon'd, fineſt, cleareſt Oak,
one, two or more Feet ſquare, and about three Inches thick.
Take two Boards, and get them planed on both Sides, and
then laid in the Sun-ſhine, or near a moderate Fire 2 or 3
Days together ; then plane them again, and fix them with
good Joints ; and faſten them in gluing with wodden Pegs,
as I have ſeen Coopers fix their Pieces of Heading for their
Caſks ; and when thus glued and dried, plane them again,
and then faſten them, by nailing two ſmall Plates of Iron
or Tin on the Back. If you cannot get ſeaſon'd Wood, but
green, then boil it about an Hour in Water, to make it
tough, and keep it from warping. In the general, Wood
is accounted better than Stone, becauſe it keeps the Co-
louring more ſtanch or firm.

Before you colour your Dial-plate or Board, fix your
Iron Stile, and having marked your Hour-lines with Ink,
and faſtened a Nail at the End of each Hour-line, that the
Head of each Nail may ſhadow or direct you to the Center
when it is coloured ; and as it may happen that Golden
Letters or Figures may decay in a few Years, you may on
that Account make them with White-lead Paint, pointed
with Red in a Black Margin——When your Dial is finiſhed,
and dry, dip a Feather in your Oil, and anoint it thinly ;
for the finer you mix or grind the Colouring with the Oil,
the more beautiful it appears, though not ſo laſting.

Theſe Hints of colouring Dials, puts me in mind of ſome
other neceſſary Touches, relating to ſundry Mixtures of
Colours and dying of Stuffs, &c. collected from Mr. *Sal-
mon's Polygraphy.*

Of Colours and Dying.

Whites, are Ceruſe, Flake-white, and White-lead.

Blacks, are Lampblack, burnt Cherry-ſtones, and old
Ivory burnt.

Reds, are Red-lead, Vermilion, Red Oker, and Indian
Cake.

Greens, are Verdigreaſe, Verditer, and Sap-green, made
of the Juice of Buckthorn Berries.

Yellows, are Saffron, yellow Pink, and Gambogia.

Browns,

Browns, is Umber burnt.

Gold Colour, is Orpiment.

Again, *Verdigrease*, with a little Sap-green, makes a good and a right Green.

Blues, are Ultamarine, Smalt, Indigo, and Blue-Bice.

Of mixing Colours.

Colours are mixt by being ground on a Stone with fair Water, feverally, and dried and kept in Paper Bags for Ufe; except Lamp-black, Saffron, Smalt, Gambogia, and Sap-green.

Blue, to compound, temper a little Indigo and Smalt with Oil.

A light Blue; mix Smalt and White-lead together.

Red Colour, mix Lamp-black and White-lead together on a Marble.

A Fox Colour, is Umber burnt.

Gold Colour, is Orpiment mixt with fat Oyl, by a Knife on an Earthen Plate, or Gally-Tile rather.

To hinder Colours from cracking, put Oil of Walnuts to them.

Yellow Colour, beat Saffron to Powder, and fteep it in Vinegar.—Or take the Yellow Chives in white Lillies and Gum Water mixt for Writing.

Red, Vermillion with Gum-Water mixt for Writing.

Golden Letters, to write, mix Vermillion and Gum-Armoniack with Yelks of Eggs.

Of Dying Wool, Stuffs, &c.

To die *Blue*, Take Woad 1 Pound, and mix it with 4 Pints of boiling Water, and dip Whites in it 24 Hours.

To die *Red* of a clear Colour, take 60 Pints of Water wherein Bran has been fteeped 24 Hours, and when ftrained, diffolve 2 Pound of Allom, and a Pound of Tartar; in which Water boil what you have to dye for 2 Hours; then take it out, and boil it in half as much frefh Water made of Bran, *viz.* 30 Pints; to which add Madder 3 Pound, and fo perfect the Colour with moderate Warmth, without Boiling.

To die *Green*, Firft make a Yellow by the Direction underneath; then take 60 Pints of Water wherein Bran hath been foaked, as aforefaid, then ftrain it, let 3 Pound of Allom be diffolved in it, and then boil what you have to dye in it, for 2 Hours.   To

To dye *Yellow,* Take Woad 2 Pound, of the said Water of Bran, and boil till the Colour is good.

And if you would have the said *Yellow* to be *Green,* put the Stuff into the aforesaid *Blue Lye.*

To dye a *Sad Colour,* add Logwood to the *Black Dye* before mentioned.

To dye Linen or Thread, &c. like Red: Take Powder of Brazil and Vermilion, of each 1 Ounce, boil'd in Allom Water.

To dye Linnen or Thread Yellow; dissolve Gambogia in Allom Water, &c.

To stain Skins blue; Boil Eldern Berries, and with the Liquor brush over the Skins, and wring them; then boil the Berries in Allom-water, and wet them twice over.

A Hint of Generals, or Things proper to be known and remember'd on proper Occasions.

A Ream of Paper, 20 Quires.

A Quire of Paper, 24 or 25 Sheets.

A Bale of Paper, 10 Reams.

A Roll of Parchment, 5 Dozen, or 60 Skins.

A Dicker of Hides, 10 Skins.

Ditto of Gloves, 10 Dozen Pair.

A Last of Hides, 20 Dickers.

H Load of Timber unhewed, 40 Feet.

A Chaldron of Coals, 36 Bushels.

A Hogshead of Wine, 63 Gallons.

Ditto of Beer, 54 Gallons.

A Barrel of Beer, 36 Gallons.

Ditto of Ale, 32 Gallons.

A Grofs, 144, or 12 Dozen.

A Weigh of Cheese 256 Pounds.

Days in a Year, 365, Weeks, 52, and Hours, 8766.

Pence in a Pound 240, Farthings 960.

An Acre of Land, 160 square Poles or Perches.

A Last of Corn or Rape Seed, 10 Quarters.

Ditto of Pot Ashes, Cod-fish, White-herrings, Meal, Pitch and Tar, 12 Barrels.

Ditto of Flax and Feathers 17 C. of Gun-powder 24 Barrels, or 2400 lb. of Wool 4368 lb.

A Tun of Wine, 252 Gallons, Oil of Greenland, 252 Gallons; and sweet Oil of Genoa, 236 Gallons.

A Tun in Weight, 20 C. of Iron, &c. but of Lead there is but 19 C and a Half, called a Fodder or Fother.

A Todd of Wool, 28 Pounds. A

A Pack of ditto, 364 Pounds.

A Load of Bricks 500; and of Plain-Tiles, 1000.

A Stone of Fish, 8 ℔. and of Wool 14 ℔. the same for Horseman's Weight, and also Hay; but Pepper, Cinnamon, and Allom, have but 13 ℔. ½ to the Stone.

Ditto of Glass, 5 Pounds; and a Sear of ditto, 24 Stone.

A Truss of Hay, 56 Pounds, and a Load of ditto, 39 Trusses.

 Note, *New Hay in June and August ought to be 60 Pounds to the Truss; as per Statute of 2 of* William *and* Mary, 1693.

A Cade of Red Herrings, 500; and of Sprats, 1000.

Iron and Shot, 14 ℔. to the Stone.

Barrels of sundry Commodities.

Anchovies, 30 lb.	Raisins, 1 C. wt.
A double Barrel, 60 lb.	Oil, 31 Gallons and Half.
Nuts or Apples, 3 Bushels.	Spanish Tobacco, 2 C. to
Pot-ash or Barrilla, 200 lb.	3 C.
White or Black Plates, 300.	Gun Powder, 1 C. wt.
Candles 10 doz. lb.	Soap, 240 lb.
Salmon or Eel, 42 Gall.	Butter, 224 lb.
Figs, 3 qrs. 14 lb. to 2 C. ¼	Herrings, 32 Gallons.

Things in Wholesale Trade, bought and sold by the Thousand.

Cuttle Bones.	Bricks.
Oranges and Lemmons.	Clinkers, or Flanders Tiles.
Chair Nails.	Billets and Leaves of Horn.
Tacks and Tenter-Hooks.	Barrel Hoops.
Pomgranates and Tazels.	Squirrel Skins.
Goose Quills and Thimbles.	Slat and Hilling Stones.
Pins and small Needles, by the 1000 Dozen.	

Things sold and bought at Six Score to the Hundred.

Bauks and Barlings,	Nails, Eggs, and Cod-fish,
Barrel and Pipe Boards.	Cole, Ling, and new Land-
Bomspars and Bow-staves.	fish, Stock-fish of all Sorts.
Canspars and Caprevans.	Ells of Canvas, and most Fo-
Herrings and Deal Boards.	reign Linnens.
	And Hhd. Staves.

Of Money.

THE Current Coin of *England*, is made either of Copper, Silver, or Gold. Of *Copper* is made the Farthings and Half-pence. Of *Silver*, the Pennies, Two pences,

pences, Three-pences, Groats, Six-pences, Shillings, Half Crowns, and Crowns : But there is very little Silver coined below the Sixpence. Of *Gold* is made the Half-Guinea, the Guinea, and the 5 Guinea Piece : Befides, there are Foreign Pieces of Gold, that pafs, tho' with fome Scruple, as the *Portuguefe Moidore*, at 27*s.* and the Milled or *French Piftole* as 18*s.* There are alfo fome few ancient Pieces of Gold of a pale Colour, as being alloyed with Silver, and therefore may be reckoned the beft, and fometimes called Angel or Crown Gold ; whereas the old Gold or Broad Pieces are moftly alloy'd with Copper, which makes them of a reddifh Colour.

Imaginary Money.

We appropriate feveral Names to Money, of which there is no Coin ; as,

	s.	*d.*
The Pound of	20	0
The Mark	13	4
The Noble, or half Mark	06	8
The Angel, or	10	0

In *England* and its Colonies, Accounts are kept in Pounds, Shillings, and Pence ; and their Marks are derived from their Names in Latin, *viz. l.* for *Libræ* or Pounds, *s.* for *Solidi* or Shillings, *d.* for *Denarii* or Pence, *qr.* for *Quadrantes* or Farthings, 4 making a Penny ; and expreffed or fet down thus.

$$
\begin{array}{cccc}
l. & s. & d. & qr. \\
4 & 16 & 8 & 2
\end{array}
$$

but better thus, *l.* 4 16 8 ½ ; the Mark for Pound ftanding before the Sum denominates the firft Number, and the others are known of Courfe ; for after Pounds follow Shillings, and after Shillings fucceed Pence, *&c.* When the Price of any Thing is Shillings and Pence, it is fet down thus ;

$$
\begin{array}{cc}
s. & d. \\
4 & 6
\end{array}
$$

or thus. 4/6 : And when Shillings and Pence, and Parts of a Penny, expreffed thus,

$$
\begin{array}{cc}
s. & d. \\
4 & 6\tfrac{1}{2}
\end{array}
$$

or thus, 4/6½. The latter Way by fome is accounted the neateft, and beft Method to exprefs Parts of a Penny or Farthings ; thus,

¼ a Farthing, or one fourth Part of what it follows.
½ a Half-penny, or one Half of what it follows.
¾ three Farthings, or 3-4ths, or qrs. of what it follows.

And being thus set Fraction-wise the under Figure shews how many Parts the Quantity before it is divided into, and the upper Figure shews how many of those under Parts the Fraction stands for; as thus, ½ of an Ell, ¾ of a Foot or 9 Inches, and the same of a Shilling is 9 Pence; of a Pound is 25s.

If you are to set down 6 Yards and a Half, write thus,   Yds.
                                                                        6½
                                                                        C
Nineteen Hundred three Quarters thus,   19¾
                                                                        ℔
Sixteen Pounds and a Quarter thus,   16¼
or else thus, 16 C. ¼, 16℔. ½, 5 Feet ½, 14 Days ¾. Here the Name is put between the whole Number and the Fraction, which I think is the plainer and better Way : For Example, 6½ Hhd. may through Ignorance or Wilfulness, be read, 6 Half Hhds. as well as 6 Hhds. and a Half; and at a certain Place where I have had Business, the Wharfingers Clerks expressed their half Hhds. in this Manner.

A Table of the Value of Gold and Silver.

		l.	s.	d.
Gold.	1 Pound is worth	38	0	0
	1 Ounce	4	0	0
	1 Penny Weight	0	4	0
	1 Grain	0	0	2
Silver.	1 Pound is worth	3	0	0
	1 Ounce	0	5	0
	1 Penny Weight	0	0	¾
	1 Grain	0	0	⅛

Instrumental Arithmetick.

AS Problems or Questions in Measurement, &c. are solved or answered arithmetically by the Pen, so are they also instrumentally taken by Compasses from certain Lines, &c. or Rules made for that Purpose, for the Help of those that are deficient in Arithmetick, or for a quicker Dispatch of Business ; and such Performances are called *instrumental Arithmetick* ; and of the Instruments, the most in Vogue

Vogue or Use, are these Three: 1. The Carpenter's Plain Rule. 2. *Gunter's* Line. 3. *Coggeshall's* Sliding-Rule.

1. *The Carpenter's Plain Rule.*

I shall describe and say something of the *Carpenter's Plain Rule* in Relation to its Uses, &c.

Its Description.

This Rule is made Use of in measuring Board and Timber, being two Feet in Length, and divided into twenty-four Parts or Inches, and every one of those Parts or Inches subdivided into half Inches, and each of those Halves into Quarters, and each Quarter into two Parts; so that every Inch is divided into eight Parts, and the whole Length into 192 *Parts.*

This Rule is well known, and therefore not absolutely necessary of Representation, but however, for the better understanding it, I shall give one thus;

Under Board Measure thus described,

1	2	3	4	5	6	7
12	6	4	3	2	2	
0	0	0	0	4	0	

This Line begins at 6, and goes on to 36, within 4 Inches of the End of the Rule on the Right-hand.

Its Use.

In. Deep.	Feet.	In.	Pts.	
1	12	0	0	
2	6	0	0	
A Board be 3	4	0	0	in Length make
4	3	0	0	a Foot Square.
5	2	4	5	
6	2	0	0	

By this Table it is manifest, and easily understood, That a Board of 4 Inches requires 3 Feet in Length to make a Foot Square, and a Piece of 3 Inches broad will require 4 Feet in Length to make a Foot Square.

At the other End of this Rule is a Table called *Under Timber Measure*; and thus described.

I

1	2	3	4	5	6	7	8	—
144	36	16	9	5	4	2	2	
0	0	0	0	9	0	11	3	

This Line begins at 8 and a Half, and goes on (by Diviſions) to 36.

<div style="text-align:center">

In Square.   *Feet.*

</div>

	In Square.	Feet.	
	1	144, 0	
	2	36, 6	
	3	16, 0	
If a Piece of	4	9, 0	in Length make
Timber be	5	5, 9	a ſolid Foot.
	6	4, 0	
	7	2, 11	
	8	2, 3	

By this Table it is plain, That if a Piece of Timber be 6 Inches Square, then 4 Feet in Length of that Piece will make a ſolid Foot.

It is a common Method with Carpenters, to add the Breadth and Thickneſs of a Piece of Timber in Inches together, and call the Half thereof the Square of that Piece; but this Method gives the Content more than it is; and the greater the Difference, the larger the Error: But the true Square may be found in *Gunter's Line*, thus; place one Point of the Compaſſes upon the Line for the Thickneſs, half Way of that Extent, and that will be the true Square in Inches.

2. *Gunter's Line.*

This Line is commonly ſet on the Carpenter's plain Rule, and conſiſts of two Lines, one ſet at the End of the other, and Diſtances taken by Compaſſes, as aforeſaid; and it is ſomewhat of the following Form.

<div style="text-align:right">

Gunter's

</div>

Gunter's Line.
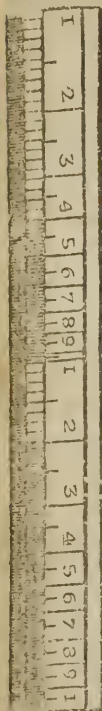
To prove the Line by the Compasses, observe,

1 to 2	equal	2 to 4
5 to 10	Distance	4 to 8
4 to 8	to	3 to 6

To Number on the Line.

Observe, That the Figures 1, 2, 3, 4, 5, 6, 7, 8, 9,. sometimes signify themselves simply or alone; at other Times, 10, 20, 30, 40, &c. Again at other Times, 100, 200, 300 or 1000, &c.

To find a Number on the Line, as suppose 134.

For the Figure 1, account 1 on the Line; and for 3, take 3 of the large Divisions; and for 4 take 4 of the smaller Divisions; and that is the Point. Again, to find 750 on the Line; for 7 take 7 on the Line, for 50 take 5 of the greater Divisions, and that is the Point.

To find a small Number on the Sine, as suppose 12.

For 1, take 1 as before, and for 2, take 2 of the larger Divisions, and that is the Point.

In measuring Board or Timber, it is best to have a Line of 2 Foot long, and Compasses 1 Foot long.

Note, Let the Measurement be by the Inch, Foot, Yard, Pole, Rod, &c. it is best to have it decimally divided, or so supposed, that is, into 10 Parts, as the Measurement should require, and on the Carpenter's Rule, the Foot so divided.

Note also, That if the Point of the Compasses fall off the Line in the Work, remove it to the same Figure or Place on the other Line; and the lesser Extent you take with the Compasses is frequently the best.

Multiplication by the Line.

To multiply 5 by 7, set one Foot of the Compasses in 1, and extend the other to 5 upwards, and with the same Extent place one Foot in 7, and the other Foot will fall on 35, the Answer.

M   *Division*

Division by the Line.

Example 1. Divide 63 by 3 ; extend from 3 to 1 downwards, and the Extent will reach the same Way from 63 to 21, the Quotient.

N. B. *In multiplying you must always extend upwards, that is, from 1, to 2, 3, to 4, &c. and on the contrary in dividing extend downwards.*

Example 2. Divide 288 *l.* equally among 16 Men : Extend from 16 to 1 downward ; and that Extent will reach the same Way, from 288 *l.* to 18 *l.* for each Man.

Again,

Example 3. Suppose 750 *l.* were to be divided among 25 Men ; Extend from 23 to 1 downward ; and that Extent will reach the same Way, from 750 to 30*l.* each Man's Share.

The Rule of Three direct.

Example 1. If a Bushel of Barley cost 3*s.* what will 40 Bushels cost ? Extend from 1 to 3 upwards, and that Extent will reach the same Way from 40 to 120 *Shillings*, the Answer.

Example 2. If one Ell of Holland cost 3 *s.* 6 *d.* what will 40 Ells cost ? Extend from 1 to 3 and a Half upwards ; and that Extent the same Way will reach from 42 to 140*s.* the Answer.

Rule of Three Inverse.

Example 1. Admit the Bushel of Wheat to be worth 3 *s.* 4 *d.* or 40 *d.* and then the *Two-penny* Loaf to weigh 20 *oz.* what shall the said *Two-penny* Loaf weigh when Wheat is worth 5 *s.* the Bushel ? Extend from 60 to 20 downwards, and that Extent the same Way will reach from 40 to 13 Ounces and a $\frac{1}{2}$ for the Answer.

Example 2. If 136 Workmen fortify a Place in a Month or 28 Days, how many must be employed to do it in eight Days ? Extend from eight downwards, to 136, and that Extent the same Way will reach from 28 to 476 Workmen, the Answer.

The Use in Board Measure.

Example. If a Board be 9 Inches broad, and 19 Feet long, what is the Content in superficial Square Feet ? Extend from 12 (the Center of Foot Measure) to 9 downwards,

wards, and that Extent the same Way will reach from 19 to 14 and $\frac{1}{4}$.

In Timber Measure.

Example. A Piece of Timber 24 Inches square, and 8 Feet long, what is the Content in solid Feet? Extend from 22 (the Center) to 24 upwards, and that Extent twice the same Way will reach from 8 to 32 Feet, the Content.

Brick Work.

How many Rods of Work are there in 4085 Feet? Extend from 272 downwards to 1, and that Extent the same Way from 4085, will reach to 15 Rods, the Answer.

3. *Coggeshal's Sliding Rule.*

The next Instrument I shall speak of, is that which goes by the Name of *Coggeshal's Sliding Rule.* And first of,

Its Description.

This Rule is framed 3 Ways, sliding by one another as the Glasiers Rule; sliding on one Side of a two Foot Joint Rule; and one Part sliding on the other, in a Foot of Length; the back Part being flat, on which are sundry Lines and Scales.

Upon the aforesaid sliding Side of the Rule, are 4 Lines of Numbers, three are double Lines; and one a single Line of Numbers, mark'd (as in the Representation by and by annexed) with *ABC* and *D*, the three marked *AB* and *C*, are called double Lines of Numbers, and figured 1, 2, 3, 4, 5, 6, 7, 8, 9. Then 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10 at the End. That mark'd *D*, is the single Line of Numbers, and figured 4, 5, 6, 7, 8, 9, 10, 20, 30, and at the End 40, even with and under 10, in the double Line next to it, and that is called the Girt Line, and so marked in the Figure.

The Figures on the three double Lines of Numbers, may be increased or decreased at Pleasure; thus one at the Beginning may be called 10, 100, 1000; the 2 is 20, 200, or 2000; so that when 1 at the Beginning is 10, then 1 in the Middle is 100, and 10 at the End is 1000; but if 1 at the Beginning is counted for 1, then 1 in the Middle is 10, and 10 at the End is 100.

And as the Figures are altered so must the Strokes or Divisions between them be altered in their Value accor-

ding

ding to the Number of the Parts they are divided into; as thus from 1 to 2, 'tis divided into 10 Parts, and each Tenth is divided into 5 Parts; and from 2 to 3, it is divided into 10 Parts, and each Tenth into 2 Parts, and so on from 3 to 5; then from 5 to 6 it is divided into 10 Parts only; and so on unto 1 in the Middle of the Rule, or the first Part of the double Line of Numbers. The second Part or Radius is divided into the like Radius.

The Girt-Line marked *D*, is divided from 4 to 5 into 10 Parts, and each Tenth into 2 Parts, and so on from 5 to 10; and then from 10 to 20, it is divided into 10 Parts, and each Tenth into 4 Parts, and so on all the Way from 20 to 40 at the End, which is right against 10 at the End of the double Line of Numbers.

The Lines on the back Side of this Rule that slide on one Side, are these, *viz.* A Line of the Inch Measure from 1 to 12, each divided into Halves, Quarters, and Half Quarters; another Line of Inch Measure from 1 to 12, each divided into 12 equal Parts, and a Line of Foot Measure, being one Foot divided into 100 equal Parts, and figured 10 20, 30, 40, 50, 60, 70, 80, 90, and 100, even with 12 on Inch Measure.

And the back Side of the sliding Piece is divided into Inches, Halves, Quarters, and Half Quarters, and figured from 12 to 24, so that it may be slid out to 2 Foot, to measure the Length of a Tree, or any Thing else you have Occasion to measure.

The Use of the Double Scale.

Example 1.

Suppose there is a Geometrical Square whose Sides are 3 Feet $\frac{1}{2}$ each; set one Foot on the Line *B*, to 3 $\frac{1}{2}$ on the Line *A*; and then against 3 $\frac{1}{4}$ on the Line *B*, is 12 Feet $\frac{1}{4}$ on the Line *A*, which is the Content of such a Square.

$$
\begin{array}{l}
\text{F. \quad Pts.} \\
3—6 \\
\quad 3—6 \\
\overline{} \\
10—6 \\
1—9 \\
\overline{} \\
12—3 \;\; \textit{Proof.}
\end{array}
\quad \Big\} \; \text{Arithmetically.}
$$

In

In this Work by Arithmetic I multiply 3 F. 6 Parts by 3. and it produces 10 Feet 6 Inches; then I take the Half of 3 F. 6 for the 6 Inches (by the Way of Practice) because 6 Inches is the $\frac{1}{2}$ of 12, &c. Again, Suppose there is a Board 27 Feet and $\frac{1}{2}$ long and 16 Feet $\frac{1}{4}$ wide, what is its Content?

	16 $\frac{1}{4}$	F. Pts.
27$\frac{1}{2}$		27,50 Length.
The Area 446 Feet, &c.		16,25

Answer 446,8750 Prod.

Suppose the Side of a Rhombus to be 8 Feet 6 Inches $\frac{1}{4}$, and the Breadth, or Line *A B*, 8 F. 4$\frac{1}{2}$, what is the Content? Set 1 Foot on the Line *B*, to 8 Feet $\frac{52}{100}$ on the Line *A*. then against 8 Feet $\frac{52}{100}$ on the Line *B* is 71 Feet $\frac{40}{100}$ Parts of a Foot on the Line *A*. And to know the Value of the Decimal, or Part of the Foot, look for $\frac{40}{100}$ on the Rule, and you will find against it 4 Inches $\frac{3}{4}$, so that the Content of this Rhombus is 71 Feet 4 Inches $\frac{3}{4}$.

Again, Suppose the Length of a Rhomboides to be 17 F. 3, or 17 $\frac{25}{100}$, and the Breadth 8 F. 7 or 8 $\frac{58}{100}$, what is the Content? Set 1 Foot on the Line *B*, to 17,25, on the Line *A*, then against 8,58 on the Line *B*, is 148 Feet on the Line *A*. The Figure hath been presented before, and operated arithmetically, therefore here unnecessary.

To measure a Triangle by the Rule.

Every Triangle is half of that long Square, whose Length and Breadth are equal to the Perpendicular and Base; therefore from the greatest Angle or Corner let fall a perpendicular Line to the opposite Side (as hath been said before) of the Base, and to find its Content take half the Length of the Base, and the whole Perpendicular, or $\frac{1}{2}$ the Length of the Perpendicular, and the whole Base, and then multiply, &c.

Example.

Let the Base of a Triangle be 4 Feet 1 Inch $\frac{3}{4}$, and the Perpendicular 2 Feet 1 $\frac{1}{4}$; the Half of the one, is 2 Feet 7 Parts; and of the other, 1 Foot 7 Parts. Set one on the Line *B*, to 4,15 on the Line *A*; then against 1,07, Half the Perpendicular on the Line *B*, is 4 Feet and almost $\frac{1}{4}$ a Foot, for the Content. Or if you set 1 on the Line *B*, to

M 3   1,07

1,07 on the Line *A*, againſt 4,15 on the Line *B*, is 4, and almoſt ½ a Foot on the Line *A*.

Again, another Way. If you ſet one on the Line *B*, to 4, 1 on the Line *A*, then againſt 2,15 on the Line *B*, is 8 Feet $\frac{8}{10}$ (which is about 11 Inches) on the Line *A*, the Half whereof is 4 Feet 5 Inches ½, which is the Content of the Triangle.

Of the Girt Line.

Suppoſe the Diameter of a Circle be 2 Feet $\frac{25}{100}$ what is its Content? Set 11 on the Girt Line *D*, to 95 on the double Line *C*; then againſt 2 Feet $\frac{25}{100}$ on *C*, the Girt Line is 3 Feet $\frac{98}{100}$ on the double Scale of Numbers *D*, which is the Content.

Board Meaſure.

Suppoſe a Board be 27 Inches ½ broad, and 15 Feet ¼ long, what is its Content? Set 12 on the double Scale *B*, to 27 ½ on the double Scale *A*; then againſt 15 Feet ¼ on the double Scale *B*, is 35 Feet the Content on the double Scale *A*.

When Dimenſions are Feet and Parts, and the Content required in Feet and Parts.

Admit a Board be 24 ¾ long, and 1 Foot ½ broad, what is the Content? Set 1 on the double Scale to 1 ½ on the double Scale *A*; then againſt 24 ¾ on the double Scale *B*, is 37 Feet $\frac{1}{10}$ on the double Scale *A*, and is the Content.

Suppoſe a Piece of Glaſing be 29 Inches ½ long, and 7 Inches broad, what is the Content? Set 144 (repreſented by 1,44) on the Line *B*, to 7 Inches on the Line *A*; then againſt 29 ½ on the Line *B*, is 1 Foot and almoſt ½ on the Line *A*.

Suppoſe a Room Wainſcotted be 44 Feet in Compaſs, and 9 Feet ¾ high, what is the Content? Set one on the double Scale *B*, to 44 Feet ½ on the double Scale *A*; then againſt 9 Feet ¾ on the double Scale *B*, is 433 Feet $\frac{6}{10}$ on the double Scale *A*, the Content.

Admit a Piece of Painting be 13 Feet ½ broad, and 23 Feet ½ long, what is the Content? Set 9 on the double Scale *B*, to 13 ½ on the double Scale *A*, then againſt 23 ½ on the double Scale *B*, is 35 Yards ¼ on the double Scale *A*, and is the Content.

Of

Of Bonds and Conditions of Bonds.

A BOND is a Writing Obligatory, for Payment of Money, &c. consisting of two Parts. 1st, The Obligation, wherein are inserted the Names of the Parties and their Additions, the Penalty, Date, &c. And 2dly, The Condition, which expresly mentions what Money is to be paid, or Thing to be performed, and the limited Time for Performance thereof; for which the Obligation is peremptorily binding.

When the Matter or Thing to be done, or not to be done, by a Condition, is unlawful or impossible, or the Condition is repugnant, insensible or uncertain, it is void: And if a Thing be possible at the Time of making the Obligation, but afterwards becomes impossible by the Act of God, or of the Law, or of the Obligee, it will be void. Also, if a Man or Woman is compell'd, for Fear of Imprisonment, to enter into a Bond, &c. such Compulsion will frustrate the Bond. *Co. Lit.*

But an Obligation may be good, altho' it contains false *Latin*, or false *English*, if the Intent of the Parties appears, and may be made certain.

Where no Place is mentioned for the Payment of Money on a Bond, the Obliger is to find out the Obligee. And if a Day is not set for the Payment of Money, the Debt is due presently; but if it be on a Mortgage, the Party shall have Time during Life, unless hastened by Request. 1 *Inst.* 208, 209.

In Obligations, he to whom the Obligation is made, is called the Obligee, and he who is bound is called the Obligor. In other Writings the Parties are stiled according to the legal Terms, as Vendor, Vendee, Lessor, Lessee, Mortgagor, Mortgagee, Gantor, Grantee, Donor, Donee, &c. But all Parties must be of the full Age of Twenty-one Years; for Infants cannot make any Obligation or Covenant, &c. unless it be for Necessaries, Apparel, Schooling, &c. Persons of full Age must also be of sound Mind, and not Lunaticks, Ideots, &c. *Co. Lit.* 171. 4 *Rep.* 126.

A Bond from One to One.

KNOW ALL MEN by these Presents, That I *John A.* of the Township of, &c. in the County of, &c. Gentleman, am held and firmly bound unto *William B.* of, &c. in the County of, &c. Esquire, in *One Hundred Pounds*

of

of good and lawful Money of *Great-Britain*, to be paid to the said *William B.* or to his certain Attorney, his Executors, Administrators or Assigns; for which Payment well and truly to be made, I bind myself, my Heirs, Executors and Administrators, firmly by these Presents, sealed with my Seal: Dated this fifth Day of *October*, in the 9th Year of the Reign of our Sovereign Lord *George* the Third, by the Grace of God, of *Great-Britain*, *France* and *Ireland*, King, Defender of the Faith, &c. and in the Year of our Lord One Thousand Seven Hundred and Sixty-nine.

THE CONDITION of this Obligation is such, That if the Above-bound *J. A.* his Heirs, Executors or Administrators, do well and truly pay or cause to be paid unto the above nam'd *W. B.* his Executors, Administrators or Assigns, the full Sum of *Fifty-two Pounds* and *Ten Shillings*, of lawful Money of *Great-Britain*, on or before the fifth Day of *January* next ensuing the Date hereof; then this Obligation shall be void, otherwise it shall remain in full Force and Virtue.

Sealed and Delivered
in the Presence of

A Bond wherein two Persons are bound to one.

KNOW ALL MEN by these Presents, that we *William A.* of, &c. in the County of, &c. Gentleman, and *John B.* of &c. in the County of, &c. Yeoman, are held and firmly bound to *Thomas C.* of, &c. Esquire, in *Two Hundred Pounds*, of good and lawful Money of *Great-Britain*, to be paid to the said *Thomas C.* or his certain Attorney, Executors, Administrators or Assigns; for which Payment to be well and truly made, we bind ourselves and each of us, jointly and severally, for, and in the whole, our and each of our Heirs, Executors and Administrators, firmly by these Presents, sealed with our Seals; dated the Day of, &c. in the Year of the Reign, &c.

THE CONDITION of this OBLIGATION is such, That if the Above-bound, *W. A.* and *J. B* or either of them, their, or either of their Heirs, Executors or Administrators, do and shall well and truly pay, or cause to be paid, unto the said *T. C.* his Executors, Administrators, or Assigns, the Sum of *One Hundred Pounds*, of lawful Money of *Great-Britain*, with Interest for the same, at the Rate

of

of, &c. per Cent. per Ann. on the Day, &c. which will be
in the Year of our Lord, &c. Then, &c. or elfe, &c.

*A Condition of a Counter Bond, or a Bond of Indemnity, where
one Man is bound for another.*

THE Condition of this Obligation is fuch, That
whereas the above-named *A. B.* at the Requeft, and
for the only proper Debt and Duty of the above-bound *C. D.*
with him the faid *C. D.* is in and by one Bond or Obligati-
on, bearing equal Date with the Obligation above written,
held and firmly bound unto *E. F.* of, &c. in the penal Sum
of *Five Hundred Pounds*, lawful Money of *New-York*, con-
ditioned for the Payment of *Two Hundred and Fifty Pounds,*
with legal Intereft for the fame, &c. next enfuing the Day
of the Date of the faid recited Obligation, as in and by the
faid Obligation and Condition thereof may more fully and
at large appear. If therefore the faid *C. D.* his Heirs, Exe-
cutors, or Adminiftrators, do and fhall well and truly pay, or
caufe to be paid, unto the faid *E. F.* his Executors, Admi-
niftrators or Affigns, the faid Sum of *Two Hundred and Fifty
Pounds*, with legal Intereft on the faid Day, &c. next enfuing
the Date of the faid recited Obligation, according to the
true Intent and Meaning, and in full Difcharge and Satis-
faction of the faid recited Obligation: Then, &c. or elfe, &c.

A Condition to perform Covenants in a Deed.

THE CONDITION of this OBLIGATION is fuch,
That if the Above-bound *A. B.* his Heirs, Executors
and Adminiftrators, and every of them, do and fhall in all
Things well and truly obferve, perform, fulfil, accomplifh,
pay, and keep all and fingular the Covenants, Grants, Ar-
ticles, Claufes, Provifoes, Payments, Conditions and Agree-
ments, which on the Part and Behalf of the faid *A. B.* his
Heirs, Executors and Adminiftrators, are, or ought to be
obferved, performed, fulfilled, accomplifhed, paid and kept,
comprifed or mentioned, in certain Indentures, bearing even
Date with the above-written Obligation, made or mention-
ed to be made, between the faid *A. B.* of the one Part, and
the above-named *C. D.* of the other Part [or in one Pair
of Indentures of Leafe made between, &c.] according to
the true Intent and Meaning of the fame Indentures;
Then, &c.

A Con

A Condition of an Arbitration Bond, with an Umpirage.

THE CONDITION of this Obligation is such, That if the Above-bound *A. B.* his Heirs, Executors and Administrators, and every of them, do and shall, for his and their Parts and Behalfs, in all Things well and truly stand to, obey, observe, perform, fulfil and keep the Award, Abitrament, Order and Determination of *E. F.* of, &c. and *G. H.* of, &c. Arbitrators indifferently chosen, as well on the Part of the said *A. B.* as on the Part and Behalf of the above-named *C. D.* to arbitrate, award, judge of, determine and agree for, upon, touching and concerning all and all Manner of Action and Actions, Cause and Causes of Action and Actions, Debts, Accounts, Differences, Quarrels, Disputes, Reckonings, Agreements, and all Dues and Demands whatsoever, both in Law and Equity, or otherwise howsoever, which between them the said *A. B.* and *C. D.* or either of them, at any Time heretofore have been, or at the Time of the Sealing hereof had, moved, stirred up, or in any wise depending, so always as the said Award, Abitrament, Judgment, final End, Determination and Agreement, between the said Parties, be made in Writing, indented under the Hands and Seals of the said Arbitrators, ready to be delivered to the said Parties, at or in, &c. next ensuing the Date of the above-written Obligation ; Then, &c.

The Umpirage.

And if the said Arbitrators shall not make and draw up the said Award in Writing, as aforesaid, on or before, &c. and the same deliver to the said Parties, as aforesaid ; if then the said *A. B.* his Executors and Administrators, and every of them, do and shall stand to, abide, observe, perform and keep the Award, Umpirage, final End and Judgment of *L. M.* of, &c. Umpire indifferently elected between the said Parties, for ending and composing of all the Differences aforesaid, so as the said Umpire do make and draw up his said Award, Umpirage and Determination, in Writing, indented under his Hand and Seal, ready to be delivered to the Parties, on or before, &c. Then, &c. or else, &c.

Of Releases of Rights, Actions, Claims and Demands.

A Release is the Discharge of a Right or Action, Debt, Duty or Demand ; and all Actions, real, personal and mix'd, may be discharged by Release ; also all Debts, Legacies,

gacies, and other Duties, Annuities, Lands, Rights and Titles to Lands, &c.

A Release of all Actions or Suits bars all Actions and Suits, and Bonds and Statutes, where the Cause of Action is subsisting at the Time of the Release. A Release of all Quarrels, discharges all Actions real and personal, and the Causes of such Actions. A Release of all Debts discharges all Debts then owing from the Releffee upon Specialties, Executions, &c. A Release of all Duties bars all Actions, Judgments, Executions, Obligations, Rents, &c. and by a Release of all Demands, all Rights and Titles to Lands, Conditions, Bonds, Statutes, Recognizances, Contracts, Covenants, and all Manner of Actions, real and personal, Debts, Duties, Judgments, Executions, Rents, Annuities, &c. are released and discharged. *Co. Lit.* 286, 291, 292, &c.

By a Release of all a Man's Right to Lands, all Actions, Entry, Title of Dower, Rents, &c. are discharged; but a Right descending to the Relessor afterwards, it is not thereby released. A Release of Title to Lands is equally extensive to a Release of Right; and a Release of all Entries, or Right of Entry, bars all Right or Power of Entry into Lands. *Co. Lit.* 289, 345.

If a Creditor be made Executor by his Debtor, or if the Creditor being a Woman, marries her Debtor, these are Releases in Law of the Debts. *Co. Lit.* 264.

A General Release of all Demands.

KNOW ALL MEN by these Presents, That I *A. B.* of, &c. Gent. have remised, released, and for ever quit-claimed, and by these Presents do for me, my Heirs, Executors and Administrators, remise, release, and for ever quit claim unto *C. D.* of, &c. Gent. his Heirs, Executors and Administrators, all and all Manner of Action and Actions, Cause and Causes of Action and Actions, Suits, Bills, Bonds, Writings, Obligations, Debts, Dues, Duties, Reckonings, Accounts, Sum and Sums of Money, Judgments, Executions, Extents, Quarrels, Controversies, Trespasses, Damages and Demands whatsoever, both at Law and in Equity, or otherwise howsoever, which against him the said *C. D.* I ever had, now have, or which I, my Heirs, Executors and Administrators, shall or may have, claim, challenge or demand, for or by Reason or Means of any Act,

Act, Matter, Cause or Thing, from the Beginning of the World to the Day of the Date of these Presents. In Witness whereof, I the said *A. B.* have hereunto put my Hand and Seal, the Day of, &c. in the Year of our Lord, One Thousand Seven Hundred and Sixty-nine.

A Release of Personal Actions.

KNOW ALL MEN by these Presents, That I *A. B.* of, &c. have remised, released and quit-claimed, and by these Presents do for me, my Heirs, Executors and Administrators, and every of them remise, release, and forever quit-claim unto *C. D.* of, &c. his Heirs, Executors and Administrators, and every of them, all and all Manner of Personal Actions, Suits, Debts, Duties, Sum and Sums of Money, Claims and Demands Personal whatsoever, from the Beginning of the World until the Day of the Date hereof. In Witness, &c.

Of Letters of Attorney, and other Authorities, &c.

A Letter of Attorney is an Authority given to another to do some Act, or perform some Thing, in like Manner as the Person authorizing might do the same. And what a Man may do by himself, he may generally do by another.

But the Attorney must not exceed his Power; if he does, what he transacts will be void. If a Man makes a Letter of Attorney to another to deliver Livery and Seisin in such a Place, and he does it elsewhere; or at such a Time, and he does it before or after, the Act of the Attorney will be void. *Ploved.* 475.

In other Cases it is the same; and a Man may limit his Authority as strictly as he pleases.

A Letter of Attorney.

KNOW all Men by these PRESENTS, That I *Charles Careful*, of *Lewis* in the County of *Sussex*, Apothecary (for divers Considerations and good Causes, me hereunto moving) have made, ordained, constituted and appointed, and by these Presents do make, ordain, constitute and appoint, my trusty Friend *Timothy Wagstaff*, of *Remsey*, in the County aforesaid, Gent. my true and lawful Attorney, for me, in my Name, and to my Use, to ask, demand, recover, or receive, of and from *A. B.* of *Rye*, in the said County,

County, the Sum of Forty Pounds, giving, and by theſe
Preſents granting to my ſaid Attorney, my ſole and full
Power and Authority, to take, purſue, and follow ſuch legal
Courſes, for the recovery, receiving and obtaining the
ſame as I myſelf might or could do, were I perſonally pre-
ſent; and upon the Receipt of the ſame Acquittances, and
other ſufficient Diſcharges, for me, and in my Name, to
make, ſign, ſeal and deliver; as alſo one more Attorney or
Attornies under him, to ſubſtitute or appoint, and again
at his Pleaſure to revoke, and further to do, perform, and
finiſh for me, and in my Name, all ſingular Thing or
Things, which ſhall or may be neceſſary touching and con-
cerning the Premiſes, as fully, thoroughly, and entirely,
as I the ſaid *Charles Careful*, in my own Perſon ought or
could do, in and about the ſame: Ratifying, allowing,
and confirming, whatſoever my ſaid Attorney ſhall lawfully
do, or cauſe to be done, in and about the Execution of
the Premiſes, by Virtue of theſe Preſents. In Witneſs
whereof, I have hereunto ſet my Hand and Seal, the 6th
Day of *May*, in the ninth Year of our Sovereign Lord
George III. by the Grace of God, King of *Great-Britain*,
&c. in the Year of our Lord God, 1769.

A Letter of Attorney by a Seaman.

KNOW all Men by theſe Preſents, That I *Timothy Tar-
paulin*, Mariner, now belonging to his Majeſty's Ship
the *Rye*, for divers good Cauſes and Conſiderations me there-
unto moving, have, and by theſe Preſents do make my truſty
Friend [or beloved Wife] *Henry Hearty*, Citizen and Baker
of *London*, my true and lawful Attorney, for me, and in
my Name, and for my Uſe, to aſk, demand and receive,
of, and from the Right Honourable the Treaſurer or Pay-
maſter of his Majeſty's Navy, and Commiſſioners of Prize-
Money, and whom elſe it may concern, as well all ſuch
Wages, and Pay, Bounty Money, Prize Money, and all o-
ther Sum and Sums of Money whatſoever, as now are,
and which hereafter ſhall and may be due or payable unto
me; alſo all ſuch Penſions, Salaries, Smart Money, or all
other Money and Things whatſoever, which now are, or
at any Time hereafter ſhall or may be due to me, for my
Service, or otherwiſe, in any one of his Majeſty's Ship or
Ships, Frigates or Veſſels: Giving and hereby granting,

<div align="right">unto</div>

unto my said Attorney, full and whole Power, to take, pursue and follow such legal Ways and Courses, for the Recovery, receiving and obtaining, and discharging upon the said Sum or Sums of Money, or any of them, as I myself might or could do, were I personally present; and I do hereby ratify, allow and confirm, all and whatever my said Attorney shall lawfully do, or cause to be done, in and about the Execution of the Premises, by Virtue of these Presents. In Witness whereof, I have hereunto set my Hand and Seal, this 22d Day of *January*, &c.

Timothy Tarpaulin, ⊕

Of Articles of Agreement.

ARTICLES of Agreement are mutual Covenants entered into by Parties, where both of them are obliged to do something, one in Return to the other.

They are of various Kinds, as Business falls out; and some of them are the following.

Articles for the taking down an old House, and building up a new One, for a certain Sum of Money.

Articles of Agreement made, &c. between A. B. of, &c. and C. D. of, &c.

FIRST, The said *C. D.* for himself, his Executors, Administrators and Assigns, doth covenant, promise and grant, to and with the said *A. B.* his Executors, Administrators and Assigns, by these Presents, in Manner following (that is to say) that he the said *C. D.* his Executors, Administrators and Assigns, or some of them, for the Considerations herein after mentioned, shall and will forthwith take down, or cause to be taken down, the now Dwelling-House of the said *A. B.* situate, &c. and in the Room and Stead thereof shall, on or before, &c. next, make, erect, build and set up, in a Workman-like Manner, one new Tenement or Dwelling House, Thirty Feet wide in Front, Fifty Feet long or deep Backwards, and Three Story high, &c. each Story being, &c. Feet; together with a Cellar of the Dimensions of, &c. And shall also make four Rooms, &c. on each Floor. And also that he the said *C. D.* his, &c. shall find and provide, at his or their own Charges and Expence, all Manner of Tiles, Bricks, Laths, Nails, Lead, Iron, Sand and Lime, Timber, and all other Materials
what-

whatsoever, which shall be fit and necessary to be used in or about the said Building, and shall carry away all Rubbish that shall any way arise by Reason of the said Building.

And the said *A. B.* for himself, his Executors and Administrators, in Consideration of the said Building so to be built and finished in Manner aforesaid, by the said *C. D.* his, &c. doth covenant and grant to and with the said *C. D.* his Executors, Administrators and Assigns, by these Presents, That he the said *A. B.* his Executors, Administrators and Assigns, or some of them, shall and will well and truly pay, or cause to be paid unto the said *C. D.* his Executors, Administrators or Assigns, the Sum of 300 l. of, &c. at three several Payments, *viz.* 100 l. thereof on, &c. (or in Hand at his Beginning of the Work, &c.) 100 l. more when the Roof of the said Building is framed, timbered and tiled; and 100 l. more, Residue, and in full Payment of the said Sum of 300 l. when the whole Building is fully compleated in a Workman-like Manner, as aforesaid.

And for the Performance of all and every the Articles of Agreements above-mentioned, the said *A. B.* and *C. D.* do hereby bind themselves, their Executors, Administrators, and Assigns, each to the other, in the Penal Sum of 600 l. of, &c. firmly by these Presents.

In Witness, &c.

Of Bills of Sale, and Bargains and Sales.

A Bill of Sale is an Instrument used for the Transferring of the Property of Goods; but a Bargain and Sale transfers Lands, Tenements, Rents, Advowsons, Tithes, &c. in Fee simple, Fee tail, for Life or Years, as well as Goods and Chattels.

A Man may bargain and sell his Goods at any Time; and if the Bargain is that you shall give me so much for a Horse and you give me a Shilling or a Penny in Earnest, which I accept, this is a perfect Sale. *Noy. Max.* 87.

Where Lands are conveyed by Bargain and Sale, there must be a good Consideration given; and where the Freehold is to pass, Inrollment is necessary (within six Months) as it is provided by *Stat.* 27. *H.* 8. and it needs no Livery of Seisin, &c. to perfect it. But a Bargain and Sale may be made of Goods and Chattels, Leases, &c. without Consideration or Inrollment, with Livery and Seisin. 5 *Co.* I, 2. *Cro.* 240.

A Bill

A Bills of Sale of Goods.

KNOW all Men, &c. That I *I. K.* of, &c. for and in Conſideration of the Sum of, &c. to me in Hand paid at and before the Sealing and delivery of theſe Preſents, by *T. S.* of, &c. the Receipt whereof I do hereby acknowledge, have bargained and ſold, and by theſe Preſents do bargain and ſell, unto the ſaid *T. S.* all the Goods, Houſhold-Stuff, and Implements of Houſhold, and all other Goods whatſoever, mentioned in the Schedule hereunto annexed, now remaining and being in, &c. in the Poſſeſſion of, &c. To have and to hold all and ſingular the ſaid Goods, Houſhold-Stuff and Impl ments of Houſhold, and every of them, by theſe Preſents, bargained and ſold unto the ſaid *T. S.* his Executors, Adminiſtrators and Aſſigns, for ever. And I the ſaid *I. K.* for myſelf, my Executors and Adminiſtrators, all and ſingular the ſaid Goods and Houſhold ſtuff unto the ſaid *T. S.* his Executors, Adminiſtrators and Aſſigns, againſt me the ſaid *I. K.* my Executors, Adminiſtrators and Aſſigns, and againſt all and every other Perſon and Perſons whatſoever, ſhall and will warrant, and for ever defend by theſe Preſents. Of which Goods, I the ſaid *I. K.* have put the ſaid *T. S.* in full Poſſeſſion, by delivering him one Silver Tankard, &c. at the Sealing hereof. In Witneſs, &c.

A Bill of Sale of Part of a Ship, with its Furniture, &c.

TO all People, &c. I *H. I.* of, &c. ſend Greeting. Know ye, that I the ſaid *H. I.* for and in Conſideration of the Sum of, &c. to me in Hand paid by *T. S.* of, &c. the Receipt whereof I do hereby acknowledge, &c. have granted, bargained and ſold, and by theſe Preſents I the ſaid *H. I.* do grant, bargain and ſell, unto the ſaid *T. S.* one eighth Part (the Whole in eight equal Parts to be divided) of the Ship called, &c. of the Port of, &c. and Burthen of, &c. now lying and being within the Harbour of, &c. together with one full eight Part of all the Maſts, Sails, Sail-yards, Anchors, Cables, Ropes, Cords, Boats, Oars, Pieces of Ordnance, Guns, Gunpowder, Shot, Tac le, Apparel, Ammunition, and Furniture to the ſaid Ship belonging, or appertaining : To have and to hold the ſaid eighth Part of the ſaid Ship, and all other the Premiſes hereby granted, with the Appurtenances, unto the ſaid *T. S.* his Executors, Adminiſtrators and Aſſigns, as his and their

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own proper Goods, and to his and their own proper Ufe and Ufes for ever. And I the faid *H. I.* do for myfelf, my Heirs, Executors and Adminiftrators, covenant and grant to and with the faid *T. S.* his Executors, and Affigns, by thefe Prefents, that I the faid *H. I.* at the Time of Sealing and Delivery of thefe Prefents, am the true and lawful Owner and Proprietor of the faid eighth Part of the faid Ship, and Premifes hereby granted, with the Appurtenances. And that I have full Power and Authority to grant, bargain and fell the faid eighth Part of the faid Ship, with the Premifes hereby mentioned to be granted, with the Appurtenances, unto the faid *T. S.* his Executors, Adminiftrators and Affigns, in Manner aforefaid. And alfo, That it fhall and may be lawful to and for the faid *T. S.* his Executors and Affigns, from Time to Time, and at all Times hereafter, quietly and peaceably to have, hold, poffefs and enjoy, the faid eighth Part of the faid Ship, and all other the Premifes hereby granted or mentioned, or intended to be granted, with the Appurtenances, without the Lett, Trouble, Denial, Moleftation, Hindrance or Difturbance, whatfoever, of me the faid *H. I.* my Executors, Adminiftrators or Affigns, or of any other Perfon or Perfons whatfoever, lawfully claiming, or to claim from, by or under me, them, or any of us, and that freed and difcharged of and from all former and other Bargains, Seals and Incumbrances, whatfoever made, done, or committed by me the faid *H. I.* &c. In Witnefs, &c.

A Bargain and Sale of Lands.

THIS Indenture made, &c. between *H I.* of, &c. of the one Part, and *T. R.* of, &c. of the other Part, witneffeth, That the faid *H. I.* for and in Confideration of the Sum of. &c. to him in Hand paid by the faid *T. R.* the Receipt whereof the faid *H. I.* doth hereby acknowledge, he the faid *H. I.* hath granted, bargained and fold, aliened and confirmed, and by thefe prefents doth grant, bargain and fell, alien and confirm unto the faid *T. R.* his Heirs and Affigns for ever, all that Meffuage, &c. and that Piece or Parcel of Land, &c. fituate, &c. and alfo all Trees, Woods, Under-woods, Tithes, Commons, Common of Pafture, Profits, Commodities, Advantages, Hereditaments, Ways, Waters and Appurtenances whatfoever, to the faid Meffuage and Lands above-mentioned belonging, or any

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wife appertaining : And alſo the Reverſion and Reverſions, Remainder and Remainders, Rents and Services, of the ſaid Premiſes, and of every Part thereof ; and all the E-ſtate, Right, Title, Intereſt, Claim and Demand, whatſo-ever of him the ſaid *H. I.* of, in and to the ſaid Meſſuage, &c. and Premiſes, and every Part thereof. To have and to hold the ſaid Meſſuage or Tenement, and all and ſingular the Premiſes above-mentioned, and every Part and Parcel thereof, with the Appurtenances, unto the ſaid *T. R.* his Heirs, and Aſſigns, to the only proper Uſe and Behoof of the ſaid *T. R.* his Heirs and Aſſigns, for ever. And the ſaid *H I.* for him and his Heirs, the ſaid Meſſuage or Te-nement, and Premiſes, and every Part thereof, againſt him and his Heirs, and againſt all and every other Perſon and Perſons whatſoever, to the ſaid *T. R.* his Heirs and Aſſigns, ſhall and will warrant, and for ever defend by theſe Preſents. In Witneſs, &c.

Of Gifts, Grants, Exchanges, &c.

A Deed of Gift may be made of Lands or Goods ; but Care muſt be taken that it be not fraudulent ; for a Deed of Gift made with Intent to defraud Creditors of their juſt Debts, as againſt ſuch Creditors, &c. is void. *Stat.* 27 *El.*

When a Woman is married, all her Goods and Chattels become the Goods of the Huſband by Gift in Law ; but he is liable to the Payment of her Debts. And when a Man is made Executor, the Law gives the Goods and Chattels of the Teſtator to the Executor ; but ſubject to Payment of the Teſtator's Debts. 3 *Rep.* 27.

All Grants muſt be of Things certain ; and Office, or any Goods or Chattels perſonal, may be granted by Word, with-out Deed. And if a Man make Apparel for another, and put it upon him to uſe and wear, this amounts to a Gift or Grant in Law, of the Clothes itſelf. 1 *H.* 4. 31.

A Deed of Gift of Goods and Chattels.

TO all People, &c. I *A. B.* of, &c. ſend Greeting, Know ye, That I the ſaid *A. B.* for and in Conſi-deration of the natural Love and Affection which I have and bear unto *C. D.* &c. and alſo for other good Cauſes and Conſiderations me thereunto moving, have given and grant-ed, and by theſe Preſents do give, grant and confirm unto the

the said *C. D.* all my Goods, Chattels, Leafes, Debts, Plate, Jewels, &c. and all my other Subſtance whaſoever, moveable and immoveable, of what Kind, Nature and Quality ſoever the ſame are, and in what Place or Places ſoever the ſame ſhall be found, as well in my own Cuſtody or Poſſeſſion, as in the Poſſeſſion, Hands, Power and Cuſtody of any other Perſon or Perſons whatſoever (or all thoſe Goods and Chattels in the Schedule hereunto annexed mentioned) To have and to hold all and ſingular the ſaid Goods, Chattels, Leaſes, Debts, and all other the aforeſaid Premiſes unto the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns, to his and their own proper Uſes and Uſes for ever. And I the ſaid *A. B.* all and ſingular the aforeſaid Goods, Chattels and Premiſes to the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns againſt all Perſons, do Warrant, and do for ever Defend by theſe Preſents. In Witneſs, &c.

Livery and Seiſin muſt be endorſed thus : *Memorandum* the Day, &c. Livery and Seiſin was delivered by the within named *A. B.* unto the ſaid *C. D.* of one Piece of Plate, &c. in the Name of all the Goods and Chattels within mentioned, to held to him the ſaid *C. D.* his Executors, &c. for ever, according to the within written Deed.

A Deed of Gift of Lands, &c.

THIS Indenture made, &c. between *A. B.* of, &c. of the one Part, and *C. B.* of, &c. Son of the ſaid *A. B.* of the other Part, witneſſeth, that the ſaid *A. B.* far and in Conſideration of the natural Love and Affection which he hath and beareth unto the ſaid *C. B.* And for the better Maintenance and Livelihood of him the ſaid *C. B.* hath given, granted, aliened, infeoffed and confirmed ; and by theſe Preſents doth give, &c. unto the ſaid *C. B.* his Heirs and Aſſigns, All that Meſſuage or Tenement, ſituate, &c. and alſo all thoſe Pieces or Parcels of Land lying, &c. containing, &c. in the Tenure and Occupation of, &c. and all and ſingular the Houſes, Edifices, Buildings, Barns, Stables, Courts, Gardens, Orchards, Feedings, Woods, Under-woods, Commons, Common of Paſture, Ways, Paths, Paſſages, Waters, Water-courſes, Eaſements, Profits, Commodities, Advantages, Hereditaments, and Appurtenances whatſoever to the ſaid Meſſuage or Tenement, Lands and Premiſes above-mentioned, or any Part thereof, belonging, or in any ways appertaining, or therewithal commonly uſed,

used, occupied or enjoyed, or accepted, reputed, taken or known as Part, Parcel, or belonging of or to the same: And the Reversion or Reversions, Remainder and Remainders, Rent and Services of all and singular the said Premises; and all the Estate, Right, Title, Interest, Property, Claim and Demand whatsoever, of him the said *A. B.* of, in and to the said Messuage, Lands and Premises, and of, in and to every Part and Parcel thereof, with their and every of their Appurtenances, and all Deeds, Evidences and Writings concerning the said Premises only, or only any Part thereof, now in the Hands or Custody of the said *A. B.* To have and to hold the said Messuage or Tenement, Lands, Hereditaments, and all and singular the Premises hereby granted and conveyed, or mentioned or intended to be granted and conveyed, with their Appurtenances, unto the said *C. B.* his Heirs and Assigns, to the only proper Use and Behoof of him the said *C. B.* his Heirs and Assigns for ever: And the said *A. B.* for himself, his Heirs, Executors and Administrators, doth covenant, promise and grant to and with the said *C. B.* his Heirs and Assigns, by these Presents, that he the said *C. B.* his Heirs and Assigns, shall and lawfully may, from henceforth for ever hereafter, peaceably and quietly have, hold, use, occupy, possess and enjoy the said Messuage or Tenement, Lands and Premises above-mentioned to be hereby granted, with their and every of their Appurtenances, free, clear and discharged, or well and sufficiently saved and kept harmless of and from all former and other Grants, Bargains, Sales, Gifts, Jointures, Feoffments, Leases, Dowers, Estates, Entails, Rent Charges, Arrearges of Rents, Statutes, Judgments, Recognizances, Executions, and of and from all other Titles, Troubles, Charges and Incumbrances whatsoever, had, made, committed, done or suffered, or to be had, made, &c. by him the said *A. B.* his Heirs, Executors or Administrators, or any other Person or Persons lawfully claiming or to claim, by, from or under him, them, or any, or either of them. In Witness, &c.

Of Indentures.

INDENTURES are Deeds indented, cut at the Top one into the other, and are sometimes of many Parts. When a Deed is of two Parts, it is called Bipartite ; when there are three Parts, Tripartite ; when there are four Parts,

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Quadrupartite; when five Parts, Quinquepartite; and when it is of six Parts, Sextipartite. And every Party to the Deed is to have a Part of it: The Grantor, &c. signs the Original, and the Rest are Counterparts.

There are other Indentures, smaller in their Nature, as Indentures of Apprenticeship, Partition, &c.

An Indenture for placing forth an Apprentice.

THIS Indenture made, &c. witnesseth, That *A. B.* Son of, &c. hath of his own free and voluntary Will (or by and with the Consent of his Father) placed and bound himself Apprentice unto *D. E.* of, &c. Pewterer, to be taught in the said Trade, Science or Occupation of a Pewterer, which he the said *D. E.* now useth, and with him as an Apprentice to dwell, continue and serve from the Day of the Date hereof until the full End and Term of seven Years from thence next ensuing, and fully to be compleat and ended; During all which Term, the said Apprentice his said Master well and faithfully shall serve, his Secrets keep, his lawful Commands gladly do, Hurt to his said Master he shall not do, nor wilfully suffer to be done by others, but of the same to his Power shall forthwith give Notice to his said Master. The Goods of his said Master he shall not imbezle or waste, nor them lend without his Consent to any; at Cards, Dice, or any other unlawful Games he shall not play; Taverns or Alehouses he shall not frequent; Fornication he shall not commit; Matrimony he shall not contract; from the Service of his said Master he shall not at any Time depart or absent himself without his said Master's Leave; but in all Things, as a good and faithful Apprentice, shall and will demean and behave himself towards his said Master, and all his, during the said Term. And the said Master his said Apprentice the said Trade, Science, or Occupation of a Pewterer, with all Things thereunto belonging, shall and will teach and instruct, or cause to be well and sufficiently taught and instructed, after the best Way and Manner that he can; and shall and will also find and allow unto his said Apprentice, Meat, Drink, Washing, Lodging and Apparel, both Linnen and Woollen, and all other Necessaries fit and convenient for such an Apprentice during the Term aforesaid. And at the End of the said Term shall and will give to his said Apprentice, one new Suit of Apparel, &c. In Witness, &c.

Licence.

Licence.

A *Licence* is a Power to do and execute some Act or Thing; or to enjoy some Benefit, Privilege or Protection.

A Licence to a Debtor.

TO all People, &c. We *A. B. C. D. E. F.* &c. whose Names are here under written, and Seals affixed, Creditors of *L. M.* of, &c. Merchant, send Greeting. Whereas the said *L. M.* on the Day of the Date hereof, is indebted unto us the said Creditors in divers Sums of Money, which, by Reason of great Losses and Misfortunes, he is not at present able to pay unto us without Respite of Time to be given for that Purpose: Know ye therefore, that we the said Creditors do, by these Presents, give and grant unto the said *L. M.* free Licence, and our sure and safe Conduct to come and go, and resort unto us, and every of us, to compound and take Order with us, and every one of us, for our and every of our said Debts; and also to go about his or other Business and Affairs at his free Will and Pleasure, from the Day of the Date hereof unto the full End and Term of one whole Year next coming, without any Lett, Suit, Trouble, Arrest, Attachment or other Disturbance to be offered or done unto him the said *L. M.* his Wares, Goods, Money or Merchandizes whatsoever, by us, or any of us, or by the Heirs, Executors, Administrators, Partners or Assigns of us, or any of us, or by our or any of our Means and Procurement. And we the said Creditors severally and respectively, each for himself, his Executors and Administrators, doth severally and apart, and not jointly covenant and grant to and with the said *L. M.* by these Presents, That if any Trouble, Vexation, Wrong, Damage, or Hindrance shall be done unto him the said *L. M.* either in his body, Goods or Chattels, within the said Term of one whole Year from the Date hereof, by us, or any of us, the said Creditors, or by any Person or Persons, by or thro' the Commandment, Procurement or Consent of us, or any of us, against the Tenor and Effect of this our Licence, that then he the said *L. M.* by Virtue of these Presents, shall be discharged and acquitted for ever towards and against him and them of us, his and their Executors, Administrators, Partners and Assigns, and every of them, by whom, and by whose Means he shall be vexed, arrested, troubled, imprisoned,

imprisoned, attached, grieved, or damnified, of all Manner of Actions, Suits, Quarrels, Debts, Duties and Demands, either in Law or Equity whatsoever, from the Beginning of the World to the Day of the Date of these Presents. In Witness, &c.

Of Leases, Distress for Rent, &c.

A Lease is a Deed whereby Lands and Tenements, &c. are demised and letten for a less Time than he that doth let them hath therein : And Leases are either for Life or for Years : Leases for Life are called *Freehold*, and require Livery of Seisin : Leases for Years are called *Chattels*, and are not inheritable by Heirs, but go to the Executors, &c. and a Lease for a Thousand Years is but a Chattel.

A Lease may be made for Weeks, Months, Quarters, &c. until such a Term is expired : But in every Lease for Years the Term must have a certain Commencement and Determination, or by Reference to a Certainty be made certain.

If a Tenant for Years set up Wainscot, Doors, Windows, Benches, &c. they may be taken down by such Tenant, so as it be done before the End of the Term, and he leave the Freehold in as good Condition as he found it. *Co.Lit.*55,272.

Tenants in Tail, Bishops, &c. may make Leases for Lives or Years, upon certain Conditions ; they are to be made by Deed indented, to begin from the making ; they are not to exceed three Lives, or Twenty-one Years ; they must be of Lands commonly let to Farm ; and the accustomed yearly Rent, or more, is to be reserved. *Stat.* 32 *H.* 8.

A Lease of a House for a Term of Years.

THIS Indenture made the fifth Day of *October*, in the Year of our Lord, 1769, and in the ninth Year of the Reign of our Sovereign Lord GEORGE the Third (by the Grace of God) King of *Great-Britain, France* and *Ireland*, Defender of the Faith, &c. between *A. B.* of the Parish of, &c. in the County of, &c. Gentleman, of the one Part, and *C. D.* of, &c. in the County of, &c. Mercer, of the other Part, witnesseth, That the said *A. B.* for and in Consideration of the yearly Rent and Covenants herein after reserved and contained, on the Part and Behalf of the said *C. D.* his Executors, Administrators and Assigns, to be paid, observed and performed, hath demised, granted,

granted, and to Farm letten ; and by thefe Prefents doth demife, &c. unto the faid C. D. all that Meffuage or Tenement called, &c. now in the Poffeffion of, &c. fituate and lying in, &c. with all and fingular Ways, Waters, Lights, Eafements and Appurtenances, to the faid Meffuage or Tenement belonging, or in any Ways appertaining ; together with the Ufe of the Goods in the Schedule hereunto annexed mentioned ; to have and to hold the faid Meffuage or Tenement, and Premifes above mentioned, with the Appurtenances, unto the faid C. D. his Executors, Adminiftrators and Affigns, from &c. next, for and during the Term of feven Years thence next enfuing, and fully to be compleat and ended ; Yielding and Paying therefore yearly during the faid Term unto the faid A. B. his Heirs and Affigns, the yearly Rent of 30 l. of, &c. in and upon the Feafts of, &c. by even and equal Portions. And if it fhall happen the faid yearly Rent above referved, or any Part thereof, to be behind and unpaid in Part or in All, by the Space of Twenty-one Days next after any or either of the faid Days appointed for Payment thereof, then and from thenceforth it fhall and may be lawful to and for the faid A. B. his Heirs and Affigns, into the faid Premifes to re-enter, and the fame to have again, repoffefs and enjoy, as in his and their firft and former Eftate, Right and Title ; any Thing herein contained, to the contrary thereof in any wife notwithftanding. And the faid C. D. for himfelf, his Executors, Adminiftrators and Affigns, doth covenant and grant to and with the faid A. B. his Heirs and Affigns, that he the faid C. D. his Executors, Adminiftrators and Affigns, fhall and will well and truly pay, or caufe to be paid unto the faid A. B. his Heirs and Affigns, the faid yearly Rent above referved, at the Days and Times, and in Manner and Form above expreffed, clear off, and over and above all Taxes, Rates and Payments whatfoever (except &c) and alfo that he the faid C. D. his Executors, Adminiftrators and Affigns, fhall and will from Time to Time, and at all Times during the faid Term hereby granted, well and fufficiently repair, maintain, fuftain, uphold, amend and keep the faid demifed Premifes, and every Part thereof, with the Appurtenances, in, by and with all and all Manner of needful and neceffary Reparations whatfoever, when and as often as Need fhall require ; And the fame fo well and fufficiently repaired, maintained, fuftained, upheld and kept, at the

End

End of the said Term unto the said *A. B.* his Heirs and Assigns shall and well peaceably and quietly leave and yield up; and also shall and will then leave unto the said *A. B.* his Heirs and Assigns, all such Goods as are mentioned in the Shedule hereto annexed, in as good Condition as they are now in (reasonable Usage of them, and the Casualty of Fire in the mean Time excepted.) And the said *A. B.* for himself, his Heirs and Assigns, doth covenant and grant to and with the said *C. D.* his Executors, Administrators and Assigns, that he the said *C. D.* his Executors, Administrators and Assigns, shall and may, by and under the yearly Rent and Covenants herein before reserved and contained, peaceably and quietly have, hold, occupy, possess and enjoy, all and singular the said Messuage or Tenement and Premises above-mentioned, with the Appurtenances, for and during the said Term hereby granted, without the Lett, Trouble, Hindrance, Molestation, Interruption and Denial of him the said *A. B.* his Heirs and Assigns, or of any other Person or Persons claiming, or to claim by, from or under him. In Witness whereof the Parties first above named, have to these present Indentures interchangeably set their Hands and Seals, the Day and Year above written.

Of Assignments.

AN *Assignment* is the setting over all a Man's Right, in Land or Goods, to another Person. There is an Assignee in Deed, and an Assignee in Law; An Assignee in Deed, is he to whom a Lease, Estate or Interest, is assigned by Deed: And an Assignee in Law, is such as the Law appointeth without Deed, as an Executor is an Assignee in Law. *Dy.* 5.

If a Lessee for Years assign over his Term, the Landlord may charge which of them he will; but an Acceptance of the Rent from the Assignee (knowing of the Assignment) determines the Election. 3 *Co.* 24.

An Assignment of a Bond.

WHEREAS *A. B.* of, &c. in and by one Bond or Obligation, bearing Date, &c. became bound to *C. D.* of, &c. in the Penal Sum of 500 l. conditioned for the Payment of 250 l. and Interest, at a Day since past, as by the said Bond and Condition thereof may appear. And whereas

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there now remains due to the said *C. D.* for Principal and Interest on the said Bond, the Sum of 275 l. of, &c. Now know all Men by these Presents, that the said *C. D.* for and in Consideration of the said Sum of, &c. to him in Hand paid by *E. F.* of, &c. the Receipt whereof the said *C. D.* doth hereby acknowledge, he the said *C. D.* hath assigned and set over, and by these Presents doth assign and set over unto the said *E. F.* the said recited Bond or Obligation, and the Monies thereupon due and owing. And all his Right, and Interest of, in and to the same. And the said *C. D.* for the Considerations aforesaid, hath made, ordained, constituted and appointed, and by these Presents doth make, &c. the said *E. F.* his Executors and Administrators, his true and lawful Attorney and Attornies irrevocable, for him and in his Name, and in the Name and Names of his Executors and Administrators, but for the sole and proper Use and Benefit of the said *E. F.* his Executors, Administrators, and Assigns, to ask, require, demand, and receive of the said *A. B.* his Heirs, Executors and Administrators, the Money due on the said Bond; and on Nonpayment thereof, him his Heirs, Executors, and Administrators, to sue for, recover and receive the same. And on Payment thereof, to deliver up and cancel the said Bond, and give sufficient Releases and Discharges thereof; and one or more Attorney or Attornies under him to constitute; and whatsoever the said *E. F.* or his Attorney, shall lawfully do in the Premises, the said *C. D.* doth hereby allow and confirm. And the said *C. D.* doth covenant with the said *E. F.* That he the said *C. D.* hath not received, nor will receive the Monies due on the said Bond, or any Part thereof, neither shall or will release or discharge the same, or any Part thereof, but will own and allow of all lawful Proceedings for Recovery thereof, he the said *E. F.* saving the said *C. D.* harmless of and from any Costs that may happen to him thereby. In Witness, &c.

Of Mortgages, &c.

A Mortgage is defined to be a Pawn of Lands, Tenements, &c. for Money borrowed: And may be made by Lease for a long Term of Years (the usual Way) Lease and Release, Assignment, &c. It is a Deed upon Condition, and until Failure in Payment of the Money borrowed, the Mortgagor is to enjoy the Lands; and tho' Failure be made he has a Right of Redemption.

If

If any Perſon, who has once mortgaged Lands, mortgage the ſame to any other Perſon, without diſcovering to the ſecond Mortgagee the prior Mortgage, the Mortgagor ſhall forfeit his Right of Equity of Redemption ; and the ſecond Mortgagee may redeem. *Stat.* 4. & 5. *W.* & *M.*

Beſides Mortgages of Lands, Goods may be granted on Condition, in the Nature of Mortgage.

A Mortgage of Goods.

THIS Indenture made, &c. between *L. M.* of, &c. of the one Part, and *W. H.* of, &c. of the other Part, witneſſeth, That the ſaid *L. M.* for and in Conſideration of the Sum of, &c. to him in Hand paid by the ſaid *W. H.* at and before the Sealing and Delivery of theſe Preſents, the Receipt whereof the ſaid *L. M.* doth hereby acknowledge ; He the ſaid *L. M.* hath bargained and ſold, and by theſe Preſents doth bargain and ſell unto the ſaid *W. H.* One Waggon, with the Horſe-Tackle and other Appurtenances thereto belonging, &c. To have and to hold the ſaid Waggon, and all other the Goods and Chattles above, by theſe Preſents bargained and ſold unto the ſaid *W. H.* his Executors, Adminiſtrators and Aſſigns for ever. Provided always, and upon Condition, That if the ſaid *L. M.* his Executors, Adminiſtrators and Aſſigns, do and ſhall well and truly pay, or cauſe to be paid unto the ſaid *W. H.* his Executors, Adminiſtrators and Aſſigns, the full Sum of, &c. in and upon, &c. next coming, That then theſe Preſents, and every Thing herein contained, ſhall ceaſe, determine, and be void ; any Thing herein contained, to the contrary in any wiſe notwithſtanding. And the ſaid *L. M.* for himſelf, his Executors and Adminiſtrators, doth covenant and grant to and with the ſaid *W. H.* his Executors, Adminiſtrators and Aſſigns, that he the ſaid *L. M.* his Executors, &c. ſhall and will well and truly pay, or cauſe to be paid unto the ſaid *W. H.* his Executors, &c. the ſaid Sum of, &c. at the Day and Time, and in Manner and Form aforeſaid, according to the true Intent and Meaning of theſe Preſents. In Witneſs, &c.

A Mortgage of Lands.

THIS Indenture made, &c. between *A. B.* of, &c. of the one Part, and *C. D.* of, &c. of the other Part, witneſſeth that the ſaid *A. B.* for and in Conſideration of

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the Sum of, &c. to him in Hand paid by the said *C. D.* the Receipt whereof the said *A. B.* doth hereby confess and acknowledge; he the said *A. B.* hath granted, bargained and sold, and by these Presents doth grant, bargain and sell unto the said *C.D.* All that Messuage or Tenement, &c. situate, lying and being, &c. And also the Reversion and Reversions, Remainder and Remainders, Rents and Services of all and singular the said Premises above-mentioned, and of every Part and Parcel thereof, with the Appurtenances. To have and to hold the said Messuage or Tenement, Lands and Premises above-mentioned, and every Part and Parcel thereof, with the Appurtenances, unto the said *C. D.* his Executors, Administrators and Assigns, for and during the Term of 500 Years next and immediately ensuing and following, and fully to be compleat and ended; Yielding and paying therefore yearly during the said Term, one Pepper Corn in and upon the Feast of, &c. if demanded. Provided always, and upon Condition, that if the said *A. B.* his Heirs, and Assigns, do and shall well and truly pay or cause to be paid unto the said *C. D.* his Executors, Administrators or Assigns, the Sum of, &c. with legal Interest for the same, in and upon, &c. next ensuing the Date hereof; then these Presents, and every Thing herein contained, shall cease, determine, and be void; any Thing herein contained to the contrary notwithstanding. And the said *A. B.* for himself, his Heirs and Assigns, doth covenant and grant to and with the said *C. D.* his Executors, Administrators and Assigns, that he the said *A. B.* his Heirs and Assigns, shall and will well and truly pay, or cause to be paid unto the said *C. D.* his Executors, Administrators or Assigns, the said full Sum of, &c. in and upon the said, &c. next coming, according to the true Intent and Meaning of these Presents. And also, in case Failure shall be made, that he the said *C. D.* his Executors, &c. shall and may at all Times after Default, in Performance of the Proviso or Condition herein contained, peaceably and quietly enter into, have, hold, occupy, possess and enjoy all and singular the said Messuage, Lands, and Premises above-mentioned, and every Part and Parcel thereof, with the Appurtenances, for and during the Remainder of the said Term of 500 Years hereby granted, which shall be then to come and unexpired, without the Lett, Hindrance, Molestation, Interruption and Denial of him the said *A. B.* his Heirs and Assigns, and of all and every other Person and

<div align="right">Persons</div>

Perſons whatſoever. And further, That he the ſaid *A. B.* and his Heirs, and all and every other Perſon and Perſons, and his and their Heirs, any Thing having or claiming in the ſaid Meſſuage or Tenement and Premiſes above mentioned, or any Part thereof, ſhall and will at any Time or Times, after Default ſhall be made in Performance of the Proviſo or Condition aforeſaid, make, do and execute, or cauſe or procure to be made, &c. All and every ſuch further and other lawful and reaſonable Grants, Acts and Aſſurances in the Law whatſoever, for the farther, better and more perfect granting and aſſuring of all and ſingular the ſaid Premiſes above-mentioned, with the Appurtenances, unto the ſaid *C. D.* To hold to him the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns, for and during all the Reſt and Reſidue of the ſaid Term of 500 Years above-mentioned, which ſhall be then to come and unexpired, as by the ſaid *C. D.* his Executors, Adminiſtrators or Aſſigns, or his or their Council learned in the Law, ſhall be reaſonably deviſed, adviſed and required. And laſtly, It is covenanted, granted, concluded and agreed upon by and between the ſaid Parties to theſe Preſents, That until Default ſhall be made in Performance of the Proviſo or Condition herein contained, he the ſaid *A. B.* his Heirs and Aſſigns, ſhall and may hold and enjoy the ſaid Meſſuage or Tenement and Premiſes above-mentioned, and receive and take the Rents, Iſſues and Profits thereof to his and their proper Uſe and Benefit; any Thing herein contained to the contrary thereof in any wiſe notwithſtanding. In Witneſs, &c.

Of Conveyances, Feoffments, Wills.

THE uſual Conveyance of Lands at this Time, is by Leaſe and Releaſe. A Leaſe for a Year, or a Bargain and Sale, is firſt drawn to give Poſſeſſion, by Force of the Statute 27 *H.* 8. and then the Releaſe is made to convey the Fee of the Premiſes to the Perſon intended.

A Releaſe made by one that hath no Right to the Lands, is void: And a Releaſe to one, that at the Time of the Releaſe had nothing in the Lands, is alſo void; for he ought to have a Freehold, Poſſeſſion or Privity. A Releaſe of a Man's Right in Fee-ſimple, is not ſufficient to paſs the ſame; but a Releaſe to a Man and his Heirs, will paſs a Fee-ſimple, and to the Heirs of his Body, as in Eſtate Tail.
Co. Lit.

A Feoff-

A Feoffment was our ancient Conveyance of Lands; to which Livery and Seisin is necessary, the Possession being thereby given to the Feoffee: And this Deed is said to excel a Fine or Recovery, it clearing all Disseisins, and other wrongful Estates, which no other Conveyance doth; and for that it is so solemnly and publickly made it has been of all other Conveyances the most observed. *Plowd.* 554.

By Lease and Release, Feoffment to Uses, Fine and Recovery of Lands, &c. Marriage Settlements and Jointures are made to Women (in Consideration of their Fortunes) which the Law is ever careful to preserve; and whereof the Woman may not be divested, but by her own Fine. 2 *Co. Rep.*

All Grants, Conveyances, &c. made of Lands or Tenements, to defraud any Purchaser of the same for valuable Consideration as against such Purchaser, and all claiming under him, shall be void. *Stat.* 27 *Eliz.*

A Lease or Bargain and Sale for a Year, as the Foundation of a Release.

THIS Indenture made, &c. between *A. B.* of, &c. of the one Part, and *C. D.* of, &c. of the other Part, witnesseth, That the said *A. B.* for and in Consideration of the Sum of Five Shillings, &c. to him in Hand paid by the said *C. D.* the Receipt whereof is hereby acknowledged, he the said *A. B.* hath granted, bargained and sold, and by these Presents doth grant, &c. unto the said *C. D.* all that Messuage, &c. and the Reversion and Reversions, Remainder and Remainders, Rents and Services of the said Premises above mentioned, and of every Part and Parcel thereof, with the Appurtenances; To have and to hold the said Messuage or Tenement, Lands, Hereditaments and Premises abovementioned, and every Part and Parcel thereof, with the Appurtenances, unto the said *C. D.* his Executors, Administrators and Assigns, from, &c. for and during unto the full End and Term of one whole Year from thence next and immediately ensuing and following, fully to be compleat and ended; Yielding and Paying therefore one Pepper-Corn in and upon the Feast of St. *Michael* the Archangel (if demanded) To the Intent that by Virtue of these Presents, and by Force of the Statute for transferring of Uses into Possession, he the said *C. D.* may be in the actual Possession of
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all and fingular the faid Premifes above-mentioned, with the Appurtenances, and be thereby enabled to accept and take a Grant and Releafe of the Reverfion and Inheritance thereof to him and his Heirs to the only proper Ufe and Behoof of him the faid *C. D.* his Heirs and Affigns, for ever. In Witnefs, &c.

A Releafe or Csnveyance of Lands.

THIS Indenture made, &c. between *A. B.* of, &c. of the one Part, and *C. D.* of, &c. of the other Part, witneffeth, That the faid *A. B.* for and in Confideration of the Sum of, &c. to him in Hand paid by the faid *C. D.* the Receipt whereof the faid *A. B.* doth hereby confefs and acknowledge, and for divers other good Caufes and Confiderations him thereunto moving; he the faid *A. B.* hath granted, bargained and fold, aliened, releafed and confirmed, and by thefe Prefents doth fully, freely and abfolutely grant, bargain, &c. unto the faid *C. D.* (in his actual Poffeffion now being, by Virtue of a Bargain and Sale to him thereof made for one whole Year, by Indenture bearing Date the Day next before the Day of the Date of thefe Prefents, and by Force of the Statute for transferring of Ufes into Poffeffion) and to his Heirs and Affigns for ever, all that Meffuage or Tenement, fituate, &c. with the Rights, Members and Appurtenances thereof, and all Houfes, Edifices, Buildings, Orchards, Gardens, Lands, Meadows, Commons, Paftures, Feedings, Trees, Woods, Under-Woods, Ways, Paths, Waters, Water-courfes, Eafements, Profits, Commodities, Advantages, Hereditaments and Appurtenances whatfoever, to the faid Meffuage or Tenement belonging, or in any wife appertaining, or which now are, or formerly have been accepted, reputed, taken, known, ufed, or occupied or enjoyed to or with the fame, or as Part, Parcel or Member thereof, or of any Part thereof, fituate, lying and being in, &c. aforefaid: And alfo the Reverfion and Reverfions, Remainder and Remainders, Rents and Services, of all and fingular the faid Premifes above-mentioned, and of every Part and Parcel thereof, with the Appurtenances: And alfo all the Eftate, Right, Title, Intereft, Claim and Demand whatfoever, as well in Equity as in Law of him the faid *A. B.* of, in and to all and fingular the faid Premifes above-mentioned, and of, in and

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to every Part and Parcel thereof, with the Appurtenances; and also all Deeds, Evidences and Writings, touching or concerning the said Premises only, or only any Part thereof, together with true Copies of all other Deeds, Evidences and Writings, which concern the said Premises, or any Part thereof, jointly with any other Lands or Tenements, now in the Custody or Possession of him the said *A. B.* or which he can or may get or come by without Suit in Law; the same Copies to be made and written at the Request, Costs and Charges, of the said *C. D.* his Heirs and Assigns: To have and to hold the said Messuage or Tenement, Lands, Hereditaments, and all and singular the Premises above-mentioned, and every Part and Parcel thereof, with the Appurtenances, unto the said *C. D.* his Heirs and Assigns, to the only proper Use and Behoof of the said *C. D.* his Heirs and Assigns, for ever. And the said *A. B.* for himself, his Heirs and Assigns, doth covenant and grant to and with the said *C. D.* his Heirs and Assigns, That he the said *A. B.* now is the true lawful and rightful owner of all and singular the said Messuages, Lands, Tenements, Hereditaments and Premises above-mentioned, and of every Part and Parcel thereof, with the Appurtenances: And also, that he the said *A. B.* now is lawfully and rightfully seised, in his own Right, of a good, sure, perfect, absolute and indefeasible Estate of Inheritance in Fee-simple, of and in all and singular the said Premises above-mentioned, with the Appurtenances, without any Manner of Condition, Mortgage, Limitation of Use or Uses, or other Matter, Cause or Thing, to alter, change, charge or determine the same: And also, that he the said *A. B.* now hath good Right, full Power, and lawful Authority, in his own Right to grant, bargain, sell and convey, the said Messuage, Lands, Tenements, Hereditaments and Premises above-mentioned, with the Appurtenances, unto the said *C. D.* his Heirs and Assigns to the only proper Use and Behoof of him the said *C. D.* his Heirs and Assigns, for ever, according to the true Intent and Meaning of these Presents; and also, that he the said *C. D.* his Heirs and Assigns, shall and may at all Times for ever hereafter, peaceably and quietly have, hold, occupy, possess and enjoy, all and singular the said Messuage, Lands, Tenements, Hereditaments and Premises above-mentioned, with the Appurtenances, without the

the Lett, Hindrance, Molestation, Interruption and Deni-
al, of him the said *A. B.* his Heirs and Assigns, and of all
and every other Person or Persons whatsoever ; and that
freed and discharged, or otherwise well and sufficiently
saved and kept harmless and indemnified, of and from all
former and other Bargains, Sales, Gifts, Grants, Leases,
Mortgages, Jointures, Dowers, Uses, Wills, Entails, Fines,
Post fines, Issues, Amerciaments, Seizures, Bonds, Annuities,
Writings Obligatory, Statutes Merchant, and of the
Staple, Recognizances, Extents, Judgments, Executions,
Rents and Arrearages of Rents, and of and from all o-
ther Charges, Estates, Rights, Titles, Troubles and In-
cumbrances whatsoever ; had, made, committed, done or
suffered, or to be had, made, &c. by the said *A. B.* or
any other Person and Persons whatsoever, claiming or to
claim, by, from or under him, them or any of them ; and
further, that he the said *A. B.* and his Heirs, and all and
every other Person and Persons, and his and their
Heirs, any Thing having or claiming in the said Premises
above-mentioned, or any Part thereof, by, from or under
him, shall and will, from Time to Time, and at all Times
hereafter, upon the reasonable Request and at the Costs
and Charges of the said *C. D.* his Heirs and Assigns, make,
do and execute, or cause or procure to be made, &c. all
and every such farther and other lawful and reasonable
Act and Acts, Thing and Things, Device and Devices,
Conveyance and Conveyances, in the Law whatsoever, for
the further, better and more perfect granting, conveying
and assuring of all and singular the said Premises above-
mentioned, with the Appurtenances, unto the said *C. D.*
his Heirs and Assigns, to the only proper Use and Behoof
of the said *C. D.* his Heirs and Assigns, for ever, as by
the said *C. D.* his Heirs or Assigns, or his or their Council
learned in the Law, shall be reasonably devised, or advised
and required. And lastly, It is covenanted, granted and
agreed upon, by and between the said Parties to these Pre-
sents, and the true Meaning hereof also is, and it is hereby
so declared, that all and every Fine and Fines, Recovery
and Recoveries, Assurance and Assurances, Conveyance and
Conveyances, in the Law whatsoever, already had, made,
levied, suffered, executed and acknowledged, or at any
Time hereafter to be had, made, &c. by or between the
said Parties to these Presents, or either of them, or by or
between

between them, or either of them, and any other Person or
Persons whatsoever, of the said Messuage, Tenement,
Lands and Premises above-mentioned, with the Appurte-
nances, either alone by itself, or jointly with any other
Lands, Tenements, or Hereditaments, shall be and enure,
and shall be adjudged esteemed and taken to be and enure,
as for and concerning all and singular the said Premises a-
bove-mentioned, with the Appurtenances, to and for the
only proper Use and Behoof of the said *C. D.* his Heirs
and Assigns, for ever, according to the true Intent and
Meaning of these Presents, and to and for none other Use,
Intent or Purpose whatsoever.　In Witness, &c.

A Deed of Feoffment of a Messuage.

THIS Indenture made, &c. between *H. I.* of, &c. of
the one Part, and *K. L.* of &c. of the other Part,
witnesseth, That the said *H. I.* for and in Consideration
of the Sum of Five Hundred Pounds of lawful Money of
Great-Britain, to him in Hand paid by the said *K. L.* the
Receipt whereof the said *H. I.* doth hereby confess and
acknowledge, and for other good Causes and Considerati-
ons him thereunto moving, he the said *H. I.* hath granted,
bargained and sold, aliened, enfeoffed, released and con-
firmed, and by these Presents doth grant, &c. unto the
said *K. L.* All that Messuage, &c. now in the Possession of,
&c. situate and lying, &c. and also the Reversion and Re-
versions, Remainder and Remainders, Rents and Services
thereof; and also all the Estate, Right, Title, Interest,
Claim and Demand, whatsoever, of him the said *H. I.* of,
in and to the same Premises, and of, in and to every
Part and Parcel thereof; To have and to hold the said
Messuage, &c. and Premises above-mentioned, with the
Appurtenances, unto the said *K. L.* his Heirs and Assigns,
to the only proper Use and Behoof of him the said *K. L.*
his Heirs and Assigns, for ever, under the yearly Rent of
Four-pence; (*or* to be holden by the Chief Lord or Lords
of the Fee of the Premises, by the Rents and Services
therefore due, and of Right accustomed.) And the said
H. I. for himself, his Heirs and Assigns, doth covenant
and grant to and with the said *K. L.* his Heirs and Assigns,
that he the said *H. I.* now is lawfully and rightfully, seised
in his own Right of a good, sure, perfect, absolute and
indefeasible

indefeasible Estate of Inheritance in Fee-simple, of and in all and singular the said Messuage and Premises above-mentioned, and of every Part thereof, with the Appurtenances, without any Manner of Condition, Mortgage, Limitation of Use or Uses, or other Matter, Cause or Thing, to alter, change, charge or determine the same : And also that he the said *H. I.* now hath good Right, full Power, and lawful Authority, in his own Right to grant, bargain, sell and convey, the said Messuage and Premises above-mentioned, with the Appurtenances, unto the said *K. L.* his Heirs and Assigns, to the only proper Use and Behoof of the said *K. L.* his Heirs and Assigns for ever, according to the true Intent and Meaning of these Presents. And also, that he the said *K. L.* his Heirs and Assigns, shall and may, from Time to Time, and at all Times hereafter peaceably and quietly have, hold, occupy, possess and enjoy, all and singular the said Premises above-mentioned to be hereby granted, with the Appurtenances, without the Lett, Trouble, Hindrance, Molestation, Interruption and Denial, of him the said *H. I.* his Heirs or Assigns, and of all and every other Person and Persons, whatsoever, claiming or to claim by, from or under him, them, or any of them. And further, that he the said *H. I.* and his Heirs, and all and every other Person and Persons, and his and their Heirs, any Thing having or claiming in the said Messuage and Premises above-mentioned, or any Part thereof, by from or under him, shall and will at all Times hereafter, at the Request and Costs of the said *K. L.* his Heirs or Assigns, make, do and execute, or cause or procure to be made, done and executed, all and every further and other lawful and reasonable Grants, Acts and Assurances in the Law whatsoever, for the further better, and more perfect granting, conveying and assuring of the said Premises hereby granted, with the Appurtenances, unto the said *K. L.* his Heirs and Assigns, to the only proper Use and Behoof of the said *K. L.* his Heirs and Assigns, for ever, according to the true Intent and Meaning of these Presents, and to and for none other Use, Intent or Purpose whatsoever. And lastly, the said *H. I.* hath made, ordained, constituted and appointed, and by these Presents doth make, ordain, constitute and appoint *M. N.* of, &c. and *O. P.* of, &c. his true and lawful Attornies jointly, and either of them severally, for him, and in his Name,

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into the said Messuage and Premises, with the Appurtenances hereby granted and conveyed, or mentioned to be granted and conveyed, or into some Part thereof, in the Name of the whole, to enter, and full and peaceable Possession and Seisin thereof for him, and in his Name, to take and have, and after such Possession and Seisin so thereof taken and had, the like full and peaceable Possession and Seisin thereof, or of some Part thereof, in the Name of the whole, unto the said *K. L.* or to his certain Attorney or Attornies, in that Behalf, to give and deliver; to hold to him the said *K. L.* his Heirs and Assigns, for ever, according to the Purport, true Intent and Meaning of these Presents; ratifying, confirming and allowing all and whatsoever his said Attornies, or either of them, shall do in the Premises. In Witness, &c.

A Will with Devise of Lands, Goods and Chattels.

IN the Name of God, Amen. I *H. I.* of, &c. being weak in Body, but of sound Memory (blessed be God) do this Day, &c. in the Year, &c. make and publish this my last Will and Testament in Manner following; (that is to say) First I give to my Son *K. I.* the Sum of Five Hundred Pounds. Also I give and bequeath to my Daughter *M. I.* the Sum of Four Hundred Pounds. Also I give to my dear Wife *E. I.* the Sum of Three hundred Pounds. Also I give to my Brother *T. I.* and Cousin *L. I.* each the Sum of One Hundred Pounds, to be paid within six Months next after my Decease. Also I give all that Messuage or Tenement, situate, &c. wherein I now live, to my said Son *K. I.* to hold to him during his Life; and after his Decease I give the same to my Daughter *M. I.* during the Remainder of my Estate and Interest therein. Also I give all my Lands in the Parish of, &c. to my Wife *E. I.* to hold to her during her natural Life, she making no Waste or Destruction thereupon; and from and after her Decease, I give and devise the same to my said Son *K. I.* for the Term of his natural Life; and after his Death I devise the same to my Daughter *M. I.* during her natural Life; and after the Determination of that Estate, I give and devise the same to my loving Friends *C. D.* and *E. F.* and their Heirs, during the Life of my said Daughter *M.* to the Intent to preserve and support the contingent Uses and Remainders

mainders herein after limited; but nevertheless, in Truſt, to permit my Daughter *M.* to receive the Rents and Profits, thereof during her Life; And from and after the Deceaſe of my ſaid Daughter *M.* then to remain to the firſt Son of my ſaid Daughter *M.* and the Heirs of the Body of ſuch firſt Son lawfully iſſuing; And for Default of ſuch Iſſue, then to the Uſe and Behoof of the ſecond, third, fourth, fifth, and all and every other Son and Sons of my ſaid Daughter *M.* begotten; the elder of ſuch Son and Sons, and the Heirs of his Body, lawfully iſſuing, to be always preferred, and to take before the Younger of ſuch Sons, and the Heirs of his Body: And for Default of ſuch Iſſue, then I give the ſame to, &c. for and during the Term of his natural Life; And after his Deceaſe, to remain to his Iſſue in Tail, in ſuch Manner as I have limited the ſame to my Daughter *M.* and for Default of ſuch Iſſue, then to remain to, &c. and the Heirs Male of his Body begotten, &c. And for Default of ſuch Iſſue, to remain to my own right Heirs for ever. All the reſt of my Lands and Tenements whatſoever, whereof I ſhall die ſeiſed, in Poſſeſſion, Reverſion or Remainder, I give to my ſaid Son *K. I.* his Heirs and Aſſigns, for ever. Alſo I give to, &c. Eight Guineas a Piece to buy them Mourning, &c. Alſo, I give to my Servant Man, &c. and the two Servant Maids that ſhall be living with me at the Time of my Deceaſe, Ten Pounds a Piece. Alſo, I give to the Poor of the Pariſh of, &c. Fifty Pounds. Alſo, I give my Wife *E. I.* during her Life, the Uſe of all my Plate and Houſhold-ſtuff; And after her Death the ſame to remain to, &c. Alſo, All the Reſt and Reſidue of my Goods, Chattels, and perſonal Eſtate whatſoever, I give to my ſaid Wife *E. I.* And I make and ordain her my ſaid Wife ſole Executrix of this my Will, in Truſt for the Intents and Purpoſes in this my Will contained. And I make my loving Friends, &c. Overſeers of this my Will, to take care and ſee the ſame performed according to my true Intent and Meaning; and for their Pains, I give each of them, &c. In Witneſs whereof, I the ſaid *H. I.* have to this my laſt Will and Teſtament ſet my Hand and Seal, the Day and Year above written.

Signed, ſealed and delivered by the ſaid
   H. I. as and for his laſt Will and Teſtament, in the Preſence of us, who were preſent at the Signing and Sealing thereof.

A Will gives and conveys Estates, and alters the Property of Lands and Goods, in like Manner as a Deed executed in a Man's Life-time. It was ordained by Statute 32 *H.* 8. and by 29 *Car.* 2. all Devises of Lands, &c. are to be made in Writing, and signed by the Devisor in the Presence of three Witnesses.

Wills are to be governed by the Intention; and the Intent in Devises may sometimes make Estates to pass contrary to the Rules of the Law, with Respect to other Deeds. The first Grant and last Will stand in Force. *Co. Lit.* 25. *Plowd.* 162.

There must be three Witnesses to the Signing and Sealing of a Will.

A short but comprehensive Account of all Arts and Sciences.

ALCHYMY, is that sublime Part of Chymistry, which teaches the Art of transmuting Metals, and making the Grand Elixir, or Philosopher's Stone, as some are weak enough to believe. But the best Definition of it is, that it is an Art without Art, which begins with Lying, is carried on with Labour, and ends with Beggary.

ALGEBRA, commonly called the Analytick Art, because it teaches how to resolve Questions, and demonstrate Theorems, by searching into the fundamental Nature and Frame of the Thing. It is the Science of Quantity in General, or a peculiar Method of Reasoning, which takes the Quantity sought, as if it were known, and then by the Help of another, of more Quantities given, proceeds by undeniable Consequences, till at length the Quantity first only suppos'd to be known, is found to be equal to some Quantity or Quantities certainly known.

ANATOMY, is that Art which teaches to dissect or take to Pieces any Animal Body, in a curious and dexterous Manner, in order to discover and explain the Original, Nature and Use, of its several Parts, for the Improvement of Physick and natural Philosophy.

ARCHITECTURE, is the Art of erecting Edifices proper for Habitations. The Antients have established five Orders of Architecture, called the *Tuscan,* the *Dorick,* the *Ionick,* the *Corinthian,* and the *Composite,* or *Roman* Order, the Difference between which Orders consists in the Column,

lumn, with its *Base* and *Capital*, and the *Entablature*, that is, the *Architrave*, *Frife* and *Cornice*; for thefe are the Parts which conflitute the Order, and each one hath its proper and peculiar Meafures. The Rules of Architecture require *Solidity*, *Convenience* and *Beauty*. *Solidity* implies the Choice of a good Foundation. and good found Materials to work with. *Convenience* confifts in fo ordering and difpofing the Parts of an Edifice, that they may not hinder or embarrafs one another. *Beauty* is that due ranging and agreeable Union and Symetry of all the Parts, which, upon the Whole, exhibits to the Eye of the Spectators a beautiful Form and Appearance. Architecture may likewife be divided into *Civil*, *Military* and *Naval*. *Civil Architecture* teaches to contrive and erect commodious Buildings for the Ufes of Civil Life; fuch as Churches, Palaces and private Houfes. *Military Architecture* fhews the beft Way of raifing Fortifications about Cities, Towns, Camps, Sea Ports, &c. *Naval Architecture* is employed about the Building of Ships, Gallies, and other Veffels for the Water, together with Ports, Moles, Docks, &c. on Shore.

A R I T H M E T I C K, is the Art of numbering truly, and of finding all the Properties and Powers of Numbers.

A S T R O L O G Y, is that foolifh Science which pretends to foretel future Events from the Motions of the heavenly Bodies, and their Afpects one to another; or from fome imaginary, hidden Qualities, which the weak Admirers of this Cheat will have to be in the Stars.

A S T R O N O M Y, is a mathematical Science, which teaches us the Knowledge of the Stars or heavenly Bodies, *viz.* Their Magnitudes, Diftances, Motions and Eclipfes.

B O O K - K E E P I N G, is the Art of keeping fo diftinctly all the Tranfactions of a Man's Bufinefs, that he may know at any Time the true State of his Affairs with Eafe and Certainty.

B O T A N Y, as it relates to the Science of *Medicine*, teaches to difcover and enumerate the feveral Virtues of Plants and Simples: As it relates alfo to *Natural Hiftory*, it teaches to diftinguifh the feveral Kinds and Species of Plants, Trees, Shrubs, &c. one from another, and to give juft Defcriptions of them.

CHYMISTRY,

C H Y M I S T R Y, teaches how to separate the different Substances that are found in mixed Bodies, as Animals, Plants or Minerals, and to reduce them to their first Principles.

C H I R O L O G Y, the Art of dumb Language, or a Method of talking by Signs made with the Hands.

C H I R U R G E R Y (or, as it is commonly written and pronounced, *Surgery*) is the third Branch of the curative Part of Medicine, and teaches how several Diseases and Accidents, incident to the Body of Man, may be cured by manual Operation. It is divided by some into five Parts. 1. *Synthesis*, a setting together Things that are separated. 2. *Diæresis*, a separating Things that were before connected. 3. *Diorthosis*, a correcting of Things squeezed together and contorted. 4. *Exæresis*, the taking away of Superfluities. 5. *Anaplerosis*, the restoring of that which was deficient. It is a common Saying, that a good Surgeon should have an Eagle's Eye, a Lion's Heart, and a Lady's Hand.

C H R O N O L O G Y, is the Art of computing Time from the Creation of the World for historical Uses, and preserving an Account of remarkable Transactions, so as to date truly the Beginnings and the Ends of Reigns of Princes, the Revolutions of Kingdoms and Empires, signal Battles, &c.

C O S M O G R A P H Y, teaches to describe the whole Frame of the Universe, with the several Parts thereof, according to their Number, Positions, Motions, Magnitudes, Figures, &c. The Sciences of Astronomy and Geography are comprehended in this.

D I A L I N G, is the Art of drawing Lines on a given Plane, in such a Manner as to shew the Hour of the Day when the Sun shines. *Papyrius Cursor* set up the first Sundial in *Rome*, about the Year of the City 447 ; and before that, according to *Pliny*, there was no Account of Time, but the Sun's rising and setting.

E T H I C S, is the Science of Morality, by which we are taught the Rules and Measures of human Action ; the Writers upon it usually divide it into two Parts : The first contains an Account of the Nature of moral Good and Evil : The other enumerates the several Virtues in which the Practice and Exercise of Morality consists, and which are the proper Means for us to obtain true Felicity, the End of all Moral Actions. G E O-

GEOGRAPHY, teaches to describe the whole Globe of the Earth and all its Parts. It is usually divided into *General* and *Particular*. General, or *Universal Geography*, considers the whole entire Globe of Earth and Water, as to its Figure, Magnitude, Motions, Land, Sea, &c. without any Regard to particular Countries. *Particular*, or *Special Geography*, considers the Constitution of the several Countries, or Regions, their Figure, Bounds, Parts, &c. The Forests, Mountains, Mines, Rivers, Animals, Plants, &c. As also the Climate, Seasons, Weather, Heat, Cold, Distance from the Equinoctial, &c. the Inhabitants, Arts, Communities, Cities, Commodities, Foods, Language, Customs, Policy, Religion, &c.

GEOMETRY, originally signifies the Art of measuring the Earth, or any Distances or Dimensions on, or belonging to it; but it is now used for the Science of Quantity, Extension or Magnitude, abstractedly considered, without any Regard to Matter. *Geometry* may be divided into four Parts. 1. *Planimetry*, or the Mensuration of plain Surfaces. 2. *Altimetry*, or the taking and measuring of Heights, whether accessible or inaccessible. 3. *Longimetry*, or the Art of taking the Distances of Things afar off, as Steeples, Houses, Trees, &c. 4. *Stereometry*, or the Art of measuring solid Bodies.

GRAMMAR, is the Art of Speaking or Writing properly, or of expressing the Relation of Things in Construction, with due Accent in Speaking, and Orthography in Writing, according to the Custom of those whose Language we learn.

HERALDRY, is the Art of Armoury, or Blazoning. It consists in the Knowledge of what relates to royal Solemnities, Cavalcades and Ceremonies at Coronations, Interviews of Kings, Instalments, Creation of Peers, Funerals, Marriages, &c. and also in giving the proper Coat-armour to all Persons, regulating their Right of Precedency in Point of Honour, and restraining those from bearing Coat-armour that have not a just Claim thereto, &c. The Herald's College is a Corporation established by *Richard* III. consisting of Kings at Arms, Heralds, and Pursuivants, who are employed to denounce War, proclaim Peace. &c.

HUSBANDRY, is the Art of tilling or cultivating the Earth, in order to render it fertile, and to assist Nature in bringing to greater Perfection the Products thereof.

HYDRAU-

HYDRAULICKS, the Art of making all Sorts of Engines to carry or raiſe Water, or which are moved by Water, and ſerve for other Uſes.

HYDROGRAPHY, is that Part of Geography which conſiders the Sea, and teaches the Art of making Sea Charts, meaſuring and deſcribing the Sea, accounting for its Tides, Counter-tides, Currents, Bays, Soundings, Gulfs; alſo its Sands, Shallows, Shelves, Rocks, Promontories, Diſtances from Port to Port, with whatſoever is remarkable either out at Sea, or on the Coaſt.

HYDROSTATICKS, is the Doctrine of Gravitation in Fluids, or that Part of Mechanicks that conſiders the Weight or Gravity of fluid Bodies, eſpecially Water, and alſo of ſolid Bodies immerged therein.

LAW, applied to the ſeveral Policies and States of People, is the Maxims and Rules they have agreed upon, or received from their Magiſtrates, in order to live in Peace and mutual Society; or it is a Command or Precept coming from ſome ſuperior Authority, which an inferior is obliged to obey. *Ariſtotle* defines it to be a Declaration determined by the Common Council of a City, ſhewing in what Manner Things are to be done; But *Chambers*, in his Dictionary, thinks this is not ſo properly a Law as a Covenant.

LOGICK, is the Art of conducting the Underſtanding in the Knowledge of Things and the Diſcovery of Truth. It may be divided into four Parts, *Apprehenſion, Judgment, Diſcourſe,* and *Method*; as in order to think aright it is neceſſary to apprehend, judge, diſcourſe and methodize rightly. My Lord *Bacon* divides Logick into four Branches, according to the Ends propoſed in each; for a Man reaſons either to find what he ſeeks, or to judge of what he finds, or to retain what he judges of, or to teach what he retains; and from hence ariſe ſo many Arts of Reaſoning, viz. The Art of Inquiſition or Invention, the Art of Examining or Judgment, the Art of Preſerving, or of Memory, and the Art of Elocution or Delivering.

MATHEMATICKS, is the Science of Quantity, and comprehends whatever is capable of being numbered or meaſured. It may be divided into *Speculative,* which reſts in the bare Contemplation of the Properties of Things; and *Practical,* which applies the Knowledge of theſe Properties to ſome Uſes in Life, as in Aſtronomy, Architecture, Geography, Mechanicks, Muſic, Opticks, Perſpective, &c.

MECHA-

MECHANICKS, is a mix'd, mathematical Science, which confiders the Nature and Laws of Motion and moving Powers, with the Effects thereof in Machines, &c.

METAPHYSICKS, may be called the Science of natural Theology; it confiders Being in general, abstracted from all Matter, *viz.* The Essence of it, which seems to have a real Being, though it does not exist, as a Rose in the Depth of Winter. It is so sublime, or rather so abstruse a Science, that there is a great Difference among Authors about its Nature and Ideas.

MUSICK, is the Science of Sound, or the Art of difposing and conducting Sounds, of proportioning them among themselves, and feparating them by juft Intervals in fuch a Manner, as to produce Harmony and Melody.

NAVIGATION, is the Art of failing or conducting a Ship or Veffel from one Place to another, the fhorteft and moft commodious Way. It likewife comprehends the Art of building and loading of Ships.

OPTICKS, is a mixed, mathematical Science, which explains the Manner wherein Vifion is performed in the Eye; treats of Sight in general, gives the Reafons of the feveral Modifications or Alterations which the Rays of Light undergo in the Eye; and fhews why Objects at different Diftances, and in different Situations, appear greater, fmaller, more diftinct, more confufed, nearer, or more remote.

PAINTING, is the Art of reprefenting natural Bodies, and giving them the Appearance of Life. It may be divided into four Parts, *Invention, Defign, Difpofition* and *Colouring*.

PERSPECTIVE, is that Part of the Mathematicks which gives Rules for the reprefenting of Objects on a plain Superficies, after the fame Manner as they would appear to our Sight, if feen through that Plain, it being fuppofed as tranfparent as Glafs.

POETRY, is the Art of inventing and compofing Fables, Stories, Allegories, &c. in Verfe. It is related to Painting, as it defcribes the Paffions and Manners of Men; and to Mufick, as its Stile confifts of Numbers and Harmony.

PHILOSOPHY, is the Knowledge or Study of Nature and Morality, founded on Reafon and Experience. Philofophy owes it Name to the Modefty of *Pythagoras,* who refufed the Title of *Wife* given to his Predeceffors, and contented himfelf with the Appellation of a Friend, or Lover of Wifdom.

PHYSICK or MEDICINE, is the Art of healing Diſeaſes. According to *Boerhaave*, it conſiſts in the Knowledge of thoſe Things by whoſe Application Life is either preſerved healthy or ſound ; or when diſordered, again reſtored to its Health and Vigour.

PHYSIOGNOMY, is the Art of knowing (or rather gueſſing) the Humour, Temper, or Diſpoſition of a Perſon, by the Lines and Characters of his Face.

RHETORICK, is the Art of ſpeaking in the moſt elegant and perſuaſive Manner ; or as my Lord *Bacon* defines it, the Art of applying and addreſſing the Dictates of Reaſon to the Fancy, and of recommending them there ſo as to attract the Will and Deſires.

SCULPTURE, is the Art of cutting or carving Wood, Stone, Marble, &c. and of forming various Figures and Repreſentations therein, particularly of Men, Beaſts, Birds, &c.

THEOLOGY or DIVINITY, is that Science which inſtructs us in the Knowledge o God and divine Things. It is generally divided into five Parts. 1. *Natural Theology*, is the Knowledge we have of God from his Works by the Light of Nature and Reaſon. 2. *Supernatural Theology*, is that which we learn from Revelation. 3. *Poſitive Theology*, is the Knowledge of the Holy Scriptures, and of the Signification thereof, conformably to the Opinions of the Fathers and Councils, without the Aſſiſtance of any Argumentation. 4. *Moral Theology*, is that which teaches the divine Laws relating to our Manners and Actions. 5. *Scholaſtick Theology*, is that which proceeds by Reaſoning, and taking certain eſtabliſhed Principles of Faith for granted, from thence deduces Abundance of ſtrange Things, and has made a fine Piece of Work of it indeed. The Antients had a Three-fold Theology. The firſt *Fabulous*, which flouriſhed among the Poets, and was chiefly employed in the Genealogies of the Gods, &c. The ſecond *Political*, which was embraced by the Politicians, Prieſts and People, as moſt ſuitable and expedient to the Safety, Quiet, and Proſperity of the State. The third, *Natural*, chiefly cultivated by the Philoſophers, as moſt agreeable to Nature and Reaſon. This laſt acknowledged only one Supream God.

Of

Of the Seven Wonders of the World.

THE *Pagans* did commonly boast of seven stately Structures, that were named, *The Seven Wonders of the World*.

I. The greatest Wonder, and most incomparable Work, was the Temple of *Ephesus*, dedicated to *Diana*. It was first begun by *Ctesiphon*, and seated (for Fear of Earthquakes) in marish Ground; it was 425 Feet long, and 220 Feet broad; it had in it 127 stately Marble Pillars, each of which had been the sole Enterprize and Work of a King who was resolved to make his Piety and Magnificence appear upon his Pillar. It was 200 Years in building, though many Thousands of Men were employed in the Work; it was rebuilt at the Command of *Alexander the Great*, by *Dinocrates*, his Engineer.

II. the Walls of *Babylon*, and the pleasant Gardens which Queen *Semiramis* planted; about this Work 300,000 Men were continually employed many Years. These Walls were 300, or 350 *Stadia* about, which make about 22 *English* Miles; they were 50 Cubits high and so broad, that two or three Chariots might go upon them abreast, without any Danger.

III. The Labyrinth of *Egypt*, built by *Maros*, or *Menis*, for his Tomb, in which 16 large Apartments, or sumptuous Palaces, were built, to equal the 16 Governments, or Provinces of *Egypt*; there were in it so many Ways and artificial Walks, that it was no easy Matter to find the Way out of it. *Dædalus* took his Model from this, to build his Labyrinth in *Crete*.

IV. The Pyramids of *Egypt*, which remain to this Time; there were three of them; the greatest was built by *Chemnis*, King of *Egypt*, as a stately Monument of his Power, and to be his Sepulchre after his Death: It was placed about 16 *English* Miles from *Memphis*, or *Grand Cairo*, and was about 1440 Feet in Height, about 143 Feet long on each Side of the square Basis, and 600,000 Men were employed in building it, during the Space of 20 Years. It is built of hard *Arabian* Stones, every one about 30 Feet long. *Chemnis* was torn in Pieces in a Mutiny of his People, and could never obtain the Honour of being interred in this Sepulchre. *Cephus*, his Brother, succeeded him, and imitated his vain glorious Actions, in erecting another less than the former.

former. The last was built by King *Mycerinus*, or (as some say) by the famous Strumpet *Rhodope*; upon this appears a great Head of black Marble, of 102 Feet round about the Temples, and about 60 Feet high from the Chin to the Crown of the Head.

V. The Mausoleum of *Caria*, which Queen *Artemisia* built, as a Sepulchre for her deceased Husband *Mausolus*; she enriched it with so many rare Ornaments, that it was esteemed one of the greatest Wonders of the World; and all Monuments of this Kind have since been called *Mausoleæa*. This Queen did love her Husband so much, that besides this Edifice, which she erected for him, she caused the Ashes of his consumed Body to be put into a Cup of Wine, and drank it, to give him a Lodging next to her Heart.

VI. The *Colossus* of *Rhodes* was made by *Chares* of *Asia Minor*, of Brass, in the Space of 12 Years, and was dedicated to the Sun. It cost about 44,000l. *English* Money, and was placed at the Entrance of the Harbour of the City, with the right Foot standing on one Side of the Land, and the Left on the other; between the Legs the tallest Ships, with their Masts, did enter into the Haven. When it fell to the Ground by an Earthquake, few Men were able to embrace the litter Finger of this prodigious Statue. It was 800 Feet high, and of a proportionable Bigness; and when broken down and beat to Pieces by the *Saracens*, that took the Island, *Anno Dom.* 684, they loaded above 900 Camels with it.

VII. The Statue of *Jupiter Olympius* was the neatest of all these Works: It was erected by the *Eleens*, a People of *Greece*, and placed in a Temple dedicated to *Jupiter*, which was enriched afterwards with many curious Rrepresentations and excellent Statues; This of *Jupiter* was sitting in a Chair half naked, but from the Girdle downwards he was covered; in the right Hand he held an Eagle, and in the Left a Scepter. *Caligula* endeavouring to transport it to *Rome*, but those that were employed about it were frighted from their Enterprize, by some unexpected Accident. This Statue was made by *Phidias*, and was 150 Cubits high; the Body was of Brass, but the Head was of pure Gold.

Among the many renowned Buildings and Errections of the Antients, the *Capitol* at *Rome* may justly claim a Place; it was consecrated to *Jupiter Imperator*; upon Mount *Tarpeia*

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it was built, and was a famous Edifice, the richest and most noted in all *Italy*. It was beautified with the Statues and Images of all the Gods, with the Crowns of Victory, and with the Spoils of the Nations conquered by the *Romans*. It was seated in the most eminent Place of the City, by *Tarquinus Priscus*, and *Servius Tullius*, two Kings of *Rome*, and afterwards mightily enlarged by the following Generations. The Temples of *Neptune*, *Vulcan*, *Saturn*, *Mars*, *Æsculapius*, *Hercules*, *Vesta*, and *Janus*, are noted by Authors to have been brave Structures, worthy of the *Roman* Grandeur; as also the *Pantheon*, dedicated to all the Gods.

To these may be added, the Royal Palace of *Cyrus*, King of *Media*, built in a very grand and extravagant Manner, by *Menon* who cemented the Stones with Gold; also the Temple built at *Athens* to *Minerva*, and another in the same City to *Mars*, where the Judges met to examine Causes of Life and Death; with the glorious Temple, or Fabrick, at *Delphos*, where *Apollo* gave Oracles. This Temple was enriched with innumerable Gifts, which came from every Part of the World: In it was a Woman Priest named *Phœbas*, otherwise *Pythia*, or *Pythonissa*, that received the Enthusiasm sitting upon a little Table supported with three Feet; it was called *Tripous* or *Cortina*, because it was covered with the Skin of the Serpent *Python*, whom *Juno* had sent to distress *Latona*, *Apollo's* Mother, in the Island of *Delos*; when *Apollo* came of Age, he killed this Serpent with his Bow and Arrows, after a long and grievous Combat; during which these Words, *Io Pæan*, were frequently heard in the Air, and which afterwards were frequently used in publick Rejoicings.

Of the MUSES.

THE *Muses* had several Names given them by the ancient Poets, according to the several Places where they dwelt; sometimes they were called *Pierides*, on account of the Forest *Pieris*, in *Macedonia*, where they were said to be born; sometimes *Heliconiades*, from Mount *Helicon*, which was near their beloved *Parnassus*, and sometimes by other Names, according to the Pleasure of the Mythologists, in their fabulous Accounts of the Heathen Deities.

They were supposed to be the Daughters of *Jupiter* and *Memory*, which Fiction was introduced, because *Jupiter*
was

was suppofed to be the firft Inventor of Difciplines, which are neceffary in order to a regular Life.

These *Mufes*, by the Affiftance of *Apollo*, invented Mufick ; their chief Office was to be prefent at folemn Feftivals, and facred Banquets, and there to fing the Praifes of famous Men, that they might encourage others to undertake glorious Actions, as *D' Affigny* obferves.

They were reprefented as *Women*, becaufe *Difciplines* and *Virtues* have feminine Names affigned to them ; they were painted young, handfome and modeft ; agreeably dreffed, and crowned with Flowers ; they were much efteemed for their Chaftity, and it is written of them, that when *Adonis*, the Favourite of *Venus*, offered to ftir up in them fome Inclinations to Love, they fell upon him, and killed him.

They were at firft but three, and called *Melete* (Meditation) *Meneme* (Memory) and *Aonide* (Singing) but a certain Carver of *Sycion*, having Orders to make three Statues of the three Mufes for the Temple of *Apollo*, miftook his Inftructions, and made three feveral Statues of each Mufe, and thefe happening to be very curious and beautiful Pieces, they were all fet up in the Temple, and from thence began to be reckoned nine *Mufes*; afterwards *Hefiod* named them, *Calliope, Clio, Erato, Thalia, Melpomene, Terpfichore, Euterpe, Polyhmnia,* and *Urania*.

Calliope as fuppofed Prefident of *Heroick Poetry, Clio* of *Hiftory, Erato* of the *Lute, Thalia* of *Comedy, Melpomene* of *Tragedy, Terpfichore* of the *Harp, Euterpe* of *Wind Mufick, Polyhmnia* of *Mufick, Urania* of *Aftronomy*.

Alexander Rofs fays, there were at firft three *Mufes*, to fhew the three Sorts of *Mufick, Singing, Blowing,* and *Playing* ; the firft in the *Throat*, the fecond in *Wind-Inftruments*, and the third upon *Strings* ; Or to fhew the Three-fold chief Learning in the World, *Philofophy, Rhetorick* and *Mathematicks : Philofophy* is Three-fold, *rational, moral* and *natural* ; there are three Parts in *Rhetorick*, the *Demonftrative*, the *Deliberative*, and the *Judicial* ; there are alfo three Parts of *Mathematicks, Arithmetick, Geometry,* and *Mufick*. Afterwards the Number of *Mufes* increafed to feven, either becaufe of feven *Holes* in *Wind Inftruments*, of feven *Strings* on other *Inftruments*, of the feven *liberal Sciences*, or of the feven *Planets*. Laftly, they came to be nine in Number, from the nine *Spheres*, which they held made a *mufical Harmony*. They were called the

the Daughters of *Jupiter* and *Mnemosyne*, to shew that *Learning* cannot be had without the *Intellect* and *Memory*, which are most eminent in learned Men ; or rather that God is the Author of *Learning*, and *Memory* the Mother or Nurse thereof ; therefore the Poet ascribes to the *Muses*, *Memory*, and *Utterance* ; by the one they are preserved, by the other they are heard.

They are call'd *Musæ* from *Maiosthai*, to enquire ; this belongs to *Invention* ; and from *Muesthai*, to initiate into *sacred Mysteries*, by which is meant *Judgment* ; so that the *Muses*, or *Learning*, consists in *Invention* and *Judgment*.

The *Muses* were winged, to shew the Nimbleness of *good Wits*, and the Quickness of *Poetry* and *Musick*, in moving the *Affections* ; they bore *Palms* in their Hands, to shew that they conquer Mens *Passions* ; they did all dance in a Ring to shew the Agreement and Harmony among the *liberal Sciences* ; and the *Graces* were joined with them to shew the solid Joy that is the constant Attendant on *Learning* and *Virtue*.

They had divers Names from divers Occasions, as *Nymphs* and *Goddesses* of Water, to shew the Clearness of *Poetry* ; *Parnassides, Heliconides, Pierides, Aonides, Pegasides, Aganippides, Libethrides, Thespiades*, &c. to shew the various Kinds of *Learning*, and the many Labours the *Scholar* must undergo, before he can attain unto Excellency. The particular Names of the *Muses* are also very significant, as *Clio*, from *Cleous* [Glory] because great is the *Glory of Learning*, though Ignorance be its Enemy ; *Euterpe*, from *Euterpus* [delightful] because there is no Delight comparable to that of virtuous learned Men ; *Thalia*, from *Thalein* [to grow green] for *Learning* will still flourish, and never wither ; *Melpomene*, from *Meletenpoiomene* [making Melody] so the Life of a Scholar is still chearful and melodious ; *Terpsichore*, from *Terpo* and *Choria* [to delight in Singing or Dancing] for the Mirth of learned Men is within themselves ; *Erato*, from *Eratus* [Love] for the more a Man knows *Learning*, the more he loves it. *Polyhymnea*, or *Polymnia*, from *Polus* and *Umnos* ; no Mens Minds are so full of Melody and spiritual Comfort, as the Minds of learned Men ; *Urania*, from *Uranos* [the Heaven] for *Learning* came from thence ; *Caliope*, from *Cales epos* [a good Voice] there is no outward Voice so charming and melodious as the inward Voice of *Knowledge* in the Mind, by which a Man

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difcourfeth with himfelf, and is never lefs alone than when he is alone.

The *Ancients* built Temples to the *Mufes* remote from Cities, and defcribed them fitting on the Top of *Parnaffus*, to fhew *Learning* hath its Seat in the *Head*, which is the Top and Capital of Man's Body; and as all *Gods* and *Goddeffes* had their *Birds* dedicated to them, fo had the *Mufes* the laborious *Bees*, who very much refemble *Scholars* in their *Providence*, *Induftry*, *Labour*, *Order*, and *Harmony*; they are content with little, yet afford much Benefit to the Owner; fo do *Scholars* to the *State*; neither is there any Creature, to which *learned Men* and *Students* are more beholden, than to the *Bee*, which both affords them *Food* and *Phyfick* in its *Honey*, and *Light* in their *Lucubrations* in its *Wax*.

Of HERCULES.

THERE has been no King, nor other Perfon, that we read of in profane Hiftory, that has rendered his Name more famous than *Hercules*, who, for his noble Acts, and glorious Deeds, was deified and placed among the Stars.

His Father is faid to be *Jupiter*, and his Mother *Alcmena*; when his Mother was big with Child with him, *Sthelenus*, King of *Mycene*, was in great Hopes of obtaining fpeedily a Son, afterwards named *Euryftheus*. *Jupiter* took an Oath, that he that fhould be born firft, fhould be King, and have an abfolute Command over the other; which when *Juno* (*Jupiter*'s Wife, the fworn Enemy of all her Hufband's Concubines, and of all the Children that were born of them) had accidentally heard, fhe caufed *Euryftheus* to come forth of his Mother's Womb, at the End of feven Months, and by that Means procured unto him the Scepter with the Sovereign Command.

'Tis faid that when *Jupiter* lay with *Hercules*'s Mother, he fpent three Nights (which he caufed to be joined together) in begetting him: his Body and Stature were anfwerable to the Pains and Power of his Father, for he was feven Feet high, had three Ranks of Teeth in his Mouth, and out of his Eyes fparkles of Fire and Light did fometimes proceed.

Juno, at the Interceffion of *Pallas*, feemed to be reconciled to *Hercules*; as a Teftimony of her Good-will to him, when in his Infancy, fhe gave fuck to him of her own

Breaft;

Breaſt; by that Means it happened, that the little *Hercules*, having ſpilt ſome of the Milk out of his Mouth, he whited that Part of the Sky that is called the Milky Way. This Kindneſs was only feigned to ſatisfy the Requeſt of *Pallas*; for a while after, when he was yet in his Cradle, ſhe ſent two dreadful Serpents to devour him, which did not however anſwer her Expectation; for the Child, without any Show of Fear, caught them in his Hands, and tore them in Pieces.

When he came to Years of Underſtanding, he was put under the Tuition of ſuch Maſters as did excel in many Arts and Sciences, to learn of them the Things that were required to make him accompliſhed. He was taught by *Teutarcs*, a *Scythian*, to handle the Spear and Dart; *Lucius*, the Son of *Apollo*, taught him the Rudiments of Learning, and becauſe he had chaſtiſed him with a Rod, *Hercules* killed him when he came to be of Age; from *Eumolpus* he learned the Art of playing upon Inſtruments of Muſick; *Chiron* gave him an Inſight into Aſtrology, and *Harpolicus* made him underſtand the other Sciences that were neceſſary to accompliſh a Man of his Birth and Valour.

He was ſcarce eighteen Years of Age, when *Euryſtheus* engaged him in the moſt difficult Enterprizes, and expoſed him to all Manner of Dangers to make him periſh; ſo that once he took a Reſolution to obey him no longer; but the *Oracle* informed him, that it was the Will of the Gods, that he ſhould paſs twelve Times more through Dangers, in Obedience to the Commands of this Tyrant. Theſe are named the twelve Adventures or Labours of *Hercules.*

1. He was appointed to deſtroy a great Lion of the Foreſt of *Nemea*, that was fallen from the Moon, and ſpoiled the Country round about; he diſcharged all his Arrows at this wild Beaſt to little Purpoſe, and then encountered it with his Club only in his Hand, but the Skin was ſo tough and hard that no Weapon could enter it, which when *Hercules* perceived, he caught hold of the raging Lion, and tore him in Pieces with his Hands. Ever after he delighted in wearing the Skin of this Lion about him, as a Token of his Victory, and in Imitation of him all Heroes have Skins of Lions, or other wild Beaſts upon their Bucklers; and ſome ſay, this is the Lion that was placed among the twelve Signs of the *Zodiack*.

2. He was sent to the Lake of *Lerna*, near *Argos*, to encounter with an Hydra, a notable Serpent, or Dragon of a strange Nature; for it had seven Heads, and when one was cut off, many others did immediately burst forth, so that it was not possible to overcome this Monster, unless all his Heads were cut off at one Time, and the rest of his Body destroyed by Fire and Sword, which was executed by *Hercules*.

3. *Eurystheus* sent him to Mount *Erymanthus*, in *Arcadia*, where a wild Boar of extraordinary Bigness destroyed all the neighbouring Fields: *Hercules* dragged him alive to *Eurystheus*, who was almost frighted out of his Wits when he beheld him.

4. He got hold of the Stag of the Mountain *Menelaus*, whose Feet were of Brass, and Horns of Gold, when he had pursued it a whole Year.

5. He put to flight the Birds of the Lake *Stympholus*, that were so numerous, and of such a prodigious Greatness, that they darkened the Air, and hindered the Sun from shining upon Men, when they flew over them; besides they did often take up some, and carry them away to devour them. But these Encounters were not worthy to be compared with his Combat against,

6. The *Amazons*, who were Women of *Scythia*, dwelling upon the Coasts of the *Hircanian Sea*, who having followed their Husbands in the War, and seeing them all cut off by the Enemy, near the River *Thermodon*, in *Cappadocia*, they resolved to maintain the War themselves, and not to suffer any Man to have Command in the Army, or Kingdom, or to live among them. They went among their Neighbours to fetch from them Children; the Males they destroyed, but kept the Females, and brought them up in a warlike Manner; and that they might be more ready to handle the Bow and Arrows, they burnt their right Paps, in their Infancy. They behaved gallantly in the Siege of *Troy* under the Conduct of *Penthesilea*; but were forced to yield to the Valour of *Hercules*, who being accompanied by *Theseus*, went against them, according to the Command of *Eurystheus*, and took their Queen *Hippolite*, who was afterwards married to *Theseus*.

7. He undertook to cleanse the Stables of *Augeas*, King of *Elis*, in which Thousands of Oxen had been daily fed, so that the Dung, by a long Continuance, was much increased, and filled the Air with Infection; *Hercules* therefore
fore

fore turned the Current of the River *Alpheus* from its ordinary Courſe, and cauſed it paſs through the Stables ; thus he carried away the Filth in one Day, according to his Bargain ; but *Augeas* was not grateful to him for his Pains, for he denied him the tenth Part of the Oxen that were kept there ; this cauſed the Death of *Augeus*, and the Loſs of his Goods.

8. He ſeized upon a Bull, that did breathe nothing but Fire and Flame, which *Neptune* had ſent into *Greece* to puniſh ſome Diſgraces and Affronts, which he had received from that Country.

9. He paſſed into *Thracia*, where he cauſed the Tyrant *Diomedes* to endure in his own Perſon, that which he made others to ſuffer, which was, he gave all Strangers that he could catch in his Kingdom to be devoured by his Horſes. *Hercules* ſerved *Biſiris* King of *Egypt*, in the ſame Manner becauſe he was ſo cruel to all Strangers, as to cut their Throats upon the Altars of *Jupiter*, that he might cloak his Cruelty by a Pretence of Piety.

10. *Geryon*, King of *Spain*, who was reported to have three Bodies, becauſe he commanded three Kingdoms, was no leſs cruel than the former ; he fed ſome Oxen, which he highly eſteemed, as *Diomedes* did his Horſes, and to keep them, he had a Dog with three Heads, and a Dragon with Seven. When *Hercules* was ſent thither by *Euryſtheus*, he treated him as he had formerly done *Diomedes*.

11. He was required to put into the Poſſeſſion of *Euryſtheus*, certain Golden Apples belonging to *Juno*, that were in the Cuſtody of ſome Nymphs, the *Heſperides*, Daughters of *Heſperus*, the Brother of *Atlas* ; but before any one could come at them, a great Dragon that was at the Entry of the Gardens where they grew, was to be firſt overcome. He found Means to accompliſh this Enterprize alſo ; ſome ſay he made Uſe of *Atlas*, who went to gather them, while he took his Burden upon him, and bore up the Heavens with his Shoulders.

12. The laſt Injunction which he received from *Euryſtheus*, was to fetch from Hell the Dog *Cerberus*, from whence he brought alſo *Theſeus*, that was gone down to keep Company with his dear Friend *Pirathous*.

Theſe glorious Actions made *Hercules* dreadful to *Euryſtheus*, and to all Princes in the World. Afterwards there was no Tyrant, nor Monſter known, but he undertook to

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deſtroy

deftroy them ; thus he put to Death *Cacus* (the Son of *Vulcan*, who had three Heads) becaufe he was a notable Robber, who did fpoil and deftroy all that came near the Mount *Aventin*. From thence he went to Mount *Caucajus*, where he delivered *Prometheus*, and killed the Eagle that devoured his Liver. He had alfo an Encounter with *Antæus*, the Son of the Earth, who was of a prodigious Bignefs and did commit all Manner of Cruelties ; *Hercules* lifted him up in his Arms, and preffed the Breath out of his Body.

But as *Hercules* was big, and of an high Stature, a fmall Matter was not fufficient to nourifh him, for as he walked in the Fields, one Day when he was hungry, he met *Theodamus*, tilling the Ground, he fnatched from him one of his Oxen, which he laid upon his Shoulders, and devoured every Bit of it before *Theodamus*, who loaded him all the while with Curfes and Imprecations.

He made a Journey into *Spain*, where he feparated the two Mountains, *Calpe* and *Abyla*, to let the main Ocean into the Land, by the Straits of *Gibraltar* ; thefe two Mountains fituated one againft another, *Calpe* in *Spain*, and *Abyla* in *Mauritania*, do appear afar off as two Pillars, they are faid to be the two Pillars of *Hercules*, where he engraved thefe Words, *Non plus ultra* ; as if thefe were the utmoft Bounds of the World, beyond which he could not enlarge his Dominions. In all his Conquefts, he made Ufe of a Club of an Olive Tree, which at laft he dedicated to *Mercury*, the God of Eloquence, whofe Virtue he acknowledged to be more profitable than the Power of Arms.

To recount all that the Antients have recorded of this famous Man, would make a pretty large Volume, and perhaps not be fo agreeable to fome Perfons as this Epitome ; therefore we will juft hint at the Cataftrophe of *Hercules*, and conclude our Narrative.

Like the Heroes of old, he was enamour'd with Women ; he married *Megara*, the Daughter of *Creon*, King of *Thebes*, whom he afterwards killed ; then he became a Slave to *Omphale*, Queen of *Lydia*, for whom he changed his Club for fpinning Inftruments, and his Lion's Skin for the Garments of a waiting Maid. Afterwards he became amorous of *Dejanira*, for whom he was to fight *Achelous*, the Son of *Thetys*, whom he conquered ; and returning with her to a River's Side, where *Neffus* the *Centaur* offered his Service to carry her behind him to the other Side ; when the Traitor
came

came over, he would have abused her, had not *Hercules* pierced him with an Arrow to the Heart; when he was ready to expire, he resolved to revenge himself in this Manner: He gave his Garment dropping with his Blood to *Dejanira*, persuading her, that if her Husband did wear it but once, he would never have Love for other Women. The silly Creature believes him, therefore she sent it to him by *Lychas* his Man, when he was sacrificing upon Mount *Oeta*; but it fell not out as she had imagined, for as soon as he had put on this Coat, the Blood of *Nessus*, which was a most powerful Poison, caused so great a Burning all over his Body, that in Despair he cast himself into a flaming Pile of Wood, and there was consumed to Ashes.

His Servant *Lychas* was drowned in the Sea, where he was changed into a Rock, and *Dejanira*, for Grief, killed herself, with a Blow of her Husband's Club.

Hercules, before he died, obliged *Philoctetes*, the Son of *Pean*, his Companion and Friend, to swear unto him never to discover the Place where his Ashes and Bones were buried; he then delivered unto him his Arrows, colour'd with the Blood of the *Hydra*, which were afterwards carried to the Siege of *Troy*.

An Account of the Births, Characters, and personal Qualities, of the Monarchs of England, from WILLIAM *the Conqueror to the Reign of his present Majesty King* GEORGE *the Third.*

NORMAN KINGS.

WILLIAM the Conqueror was Son of Robert Duke of Normandy, by one of his Mistresses named Harlotte, (whence some imagine the Word Harlot derived) a Skinner's Daughter of Falaize; which gave occasion to his being surnamed the Bastard; but this he afterwards changed to that of Conqueror, from his subduing England. He was born in 1026; and succeeded his Father as Duke of Normandy 1035; being at that Time but nine Years old; and after his Victory at Hastings in Sussex, was crowned King of England on the 14th of October, Anno 1066.

He was tall, and so big, that his Corpulency grew troublesome to him in his latter Years. His Strength was so great, that Historians say, no Person but himself, could

bend his Bow. He was laborious, feaſoned to all the Hardſhips of War, and patient in all Seaſons, Hunger, and Thirſt. He had a great Soul, and elevated Mind; and of ſo prodigious a Genius, that nothing eſcaped his Examinations. He delighted in War; underſtood it well, and was ſucceſsful in it. When once raiſed to Anger, it was almoſt impoſſible to appeaſe him.

He died of a Fever at Roan in Normandy, the 9th of September, 1087, in the 61ſt Year of his Age, and was buried at Caen in St. Stephen's Abbey, which he endowed with rich Revenues.

WILLIAM II. ſurnamed Rufus.

WILLIAM the Second ſucceeded his Father; was legitimate Son of Maud, Daughter to Baldwin the fifth Earl of Flanders.

He was born in the Year 1056; was crowned King of England by Lanfranc, Archbiſhop of Canterbury, on the 17th of September, 1087; and being wounded accidentally, as he was hunting in New-Foreſt, by one of his Domeſticks, named Walter Tyrrel, a French Knight, died of the Wound on the 2d of Auguſt, 1100, and in the 13th Year of his Reign, aged 44 Years.

The only good Quality remarkable in him, was his ſignal Courage which roſe almoſt to Fierceneſs: And he carried his Vices and Tyranny to ſo great a Height, that the Wound he received was conſidered, not as the Effect of mere Chance; but as ſent by the Hand of God, in order to rid the Engliſh of ſo wicked a Prince.

HENRY I. ſurnamed Beau-Clerc.

As King RUFUS left no Iſſue, his Brother Henry (by the ſame Mother) ſucceeded him, and was crowned King by Maurice Biſhop of London, on the 5th of Auguſt, 1100.

He was married firſt to Maud, Daughter of Malcolm, King of Scots; and afterwards to Adeliza, Daughter to Geofrey Earl of Louvain, by whom he had no Iſſue.

His Death was occaſioned by eating too many Lampreys which threw him into a Fever, of which he died in the Caſtle of Lyon in Brai near Roan, on the 1ſt of December, 1135, after a Reign of 35 Years; and was buried in the Abbey of Reading in Berkſhire. He was very handſome, brave, and had a great Capacity; was extremely ſober, inexorable to Offenders: He had a great Love for Learning, whence **he was called** Beau-Clerc; but

thefe good Qualities were fullied by Cruelty, Avarice, and Uncleannefs.

HOUSE of BLOIS.
STEPHEN, King of England.

After Henry's Deceafe, Stephen Son to Adela, Daughter of William the Conqueror, and of Stephen, Earl of Blois, was crowned at Weftminfter the 26th of December, 1135.

He died the 25th of October, 1154, in the nineteenth Year of his Reign, and fiftieth of his Age; and was buried in Feverfham Abbey.

His Merit confifted in the Greatnefs of his Courage, elevated Genius, and Soundnefs of his Judgment. Greatly fkilled in military Affairs; had great Experience, and a wonderful Patience. His Clemency and Munificence were the leaft of his Virtues: All thefe were heightened by the Stature and Majefty of his Perfon; which rendered him one of the moft amiable Princes of his Time.

HENRY II.

HENRY II. furnamed Plantagenet, and Duke of Normandy, fucceeded Stephen. He was eldeft Son of Geofrey Earl of Anjou. Touraine, and Maine, and of the Emprefs Maud, fole Heir to Henry I. Duke of Normandy.

He was born at Mans the 4th of March, 1133, and was adopted by King Stephen the 6th of November, 1153, and crowned King of England the 19th of December, 1155.

He poffeffed many good Qualities: He was juft, brave, generous, magnificent, clement, and prudent: But his Ambition and Luft were infatiable, and his Anger very violent.

On his Death-Bed he caufed himfelf to be carried to the Church of Chinon; and being laid before the Altar, expired. His Corpfe was carried to Fontevraud, as he had ordered, and was there interred. He died the 6th of July, 1189, in the 56th Year of his Age; having reigned 34 Years, 8 Months, and 11 Days.

RICHARD I. furnamed Lion's Heart.

After the Death of Henry II. his fecond Son Richard fucceeded him. His Mother was Eleanor of Acquitaine, Dutchefs of Guinne and Gafcony, &c. His exceeding Bravery acquired him the Name of Cœur de Lion, or Lion's Heart: but for any other Virtue, it is needlefs to feek for it. His Perfon was well-fhaped; blue Eyes, but

full

full of Fire; and his Hair of a fandy Colour. His Death was occafioned by a Wound he had received by an Arrow at the Siege of Chaluz in Limoufin; of which he died on April 6, 1199, in the 43d Year of his Age, and 10th of his Reign, and was buried at Fontevraud.

J O H N, furnamed Sans Terre.

This Prince came to the Crown by Virtue of the laft Will of Richard. After having gone through many Troubles, Vexations, and Difappointments, during his Reign, chiefly owing to his Vice and Ambition, he died at Newark, October 8, 1216, through Grief, for having loft his Baggage, which was very rich, which threw him into a Fever, and was augmented by eating too many Peaches.

He had Wit; but it was of the vicious Kind: Was hotheaded, reftlefs, and hafty; had no Refolution, but in his firft Tranfports; which being over, he was foft, indolent, fearful, and wavering. Was cruel, voluptuous, and covetous; had no Religion, Confcience, Honour, or Regard to Futurity. He died in the 51ft Year of his Age, and in the 18th Year of his Reign.

H E N R Y III.

This Prince fucceeded his Father, in the 10th Year of his Age: He was born October 1, 1207, and crown'd at Glocefter, October 28, 1216; and died in London the 16th of November, 1272, aged fixty-fix; of which he had reign'd fifty-fix Years and twenty Days.

He was a Prince of very few Parts; naturally inconftant and capricious. He loved Money to excefs; but then he fquander'd it away fo idly, that the prodigious Sums he levied on his Subjects, did not make him the richer. Nothing can be faid as to his Courage, becaufe he never gave any fenfible Tokens of it; but he may be juftly applauded for his Continence, and Averfion to whatever tended to Cruelty; and to conclude his Character; his Weaknefs in fuffering himfelf to be govern'd by haughty, felf-interefted Counfellors; and the arbitrary Maxims inftill'd into him from his Infancy, were the real Caufes of the Commotions which difturb'd his Government.

E D W A R D I. furnamed Long-Shanks.

After the Death of Henry III. Edward, his eldeft Son, by Eleanor of Provence, fucceeded him, and was crown'd on the 19th of Auguft, 1274; and Hiftorians fay, that on his Coronation-Day, five hundred Horfes were let loofe

about

about the Fields, with liberty to every Person to keep as many as they could catch.

He was extremely well-shaped, and very tall, but his legs were a little too long; on which Account he was surnamed Long-Shanks. He was an excellent King, a good Father, a formidable Enemy, and a brave Captain: He was chaste, just, prudent, and moderate; and on his Death-Bed exhorted his Son to continue the War with Scotland; adding, " Let my Bones be carried before you to Battle, for " sure I am that the Rebels will never dare to stand the " Sight of them.

He died at Borough on the Sands, a small Town in Cumberland, the 7th of July, 1307, after a Reign of thirtyfour Years, seven Months, and twenty Days. His Body was taken to Westminster, where it was enclosed in Wax, and deposited near that of the King his Father.

EDWARD II.

Prince Edward, after his Father's Death, succeeded him; and was the only Son that survived him. He began his Reign 1307, and was one of the most handsome and best shaped Men of his Time; and had so majestic an Air, that it was almost impossible to look on him, without entertaining an Esteem for him: But the Beauties of his Body did not correspond with his Mind. He was neither a Warrior, nor a Politician; neither zealous for his Country's Good, nor passionate of Glory; neither was he endued with a Capacity for difficult Affairs, nor had he a genius sufficient to contrive, or Resolution to go through with such: To these Circumstances were owing all the Misfortunes of his Reign. This Monarch was deposed, and his Son proclaimed King in his Stead; and was imprison'd at Kenelworth Castle; but removed afterwards to Berkeley Castle; where Sir Thomas Gurney and Sir John Maltravers put him to a cruel Death; causing a red-hot Iron to be thrust up his Fundament, and in these cruel Torments expired in October, 1327, after a Reign of twenty Years.

EDWARD III.

Edward the Third, eldest Son to the deceased King, by Isabella of France, succeeded his Father at the Age of 14, and in 1327.

Historians say, that the bare Aspect of this Prince drew Respect and Veneration. He was gentle and beneficent

to People of Virtue; but to the Vicious inexorable: A Friend to the Poor, the Widow, and Orphan, and to all the Unfortunate in general; and his greatest Delight was to sooth their Misfortunes; and though his Valour was well known to the World, it never puffed him up. His Subjects were dear to him; and the uninterrupted Union that subsisted between him and his Queen, augmented his Felicity. In short, he might have been looked upon as a perfect Prince, had not his Ambition prompted him to break, in an illaudable Manner, the Peace he had concluded with the Scots.

He died the 21st of June, 1377, in the 65th Year of his Age, and 51st of his Reign.

RICHARD II.

This Prince (who was Grandson to the deceased King) came to the Crown in the 11th Year of his Age, was born at Bourdeaux the 6th of January, 1336, and made Prince of Wales in 1377. Twenty-four Days after Edward died, Richard was crowned at Westminster.

He was Son to Edward the Black Prince, (so called on account of his wearing black Armour) who was the first created Prince of Wales.

This unfortunate Prince being of a lavishing and profuse Disposition, caused his Subjects to revolt from him, and take Arms against him: And at his Return from Ireland was seiz'd and imprisoned in Flint Castle, near Chester; but some Time after, was sent to Pontefract Castle in Yorkshire, where Sir Peter Exton, with eight Men, was sent to destroy him; but the King resolved to sell his Life as dear as possible, and kill'd four of the Assassins before he fell himself, which Exton himself effected. Thus died this unhappy Prince at thirty-three Years of Age.

He was, as Historians relate, the handsomest Monarch in the World; kind and magnificent, but soft, timid, of little Genius, and too great a Slave to his Favourites.

HOUSE of LANCASTER.

HENRY IV. surnamed Bolingbroke.

This Prince who swayed the Scepter after the deposing of Richard II. began his Reign the 30th of September, 1399. He was Son to John of Gaunt, third Son of Edward III.

His chief Character was an extreme Desire of reigning, and he came to the Throne by a Method that was univer-
fally

fally difapproved, having caufed King Richard to be murdered; which will be an eternal Blot to his Memory.

He performed very few Actions which merit any Encomium; and his Reign was a continual Series of Revolutions. 'Tis faid that he died of a Leprofy the 20th of March, 1413; being the 14th of his Reign, and 46th of his Age; but fome Writers fay he died of an Apoplexy.

HENRY V. furnamed of Monmouth.

HENRY V. eldeft Son of Henry IV. by Mary le Bohun, Daughter of Humphry Earl of Hereford, was born at Monmouth, and was made Prince of Wales Anno 1399, and began his Reign 1413.

He was well fhaped, and warlike; an experienced Soldier, and a great Politician; of an extenfive Genius in laying his Schemes, which never failed to fucceed. As he was a great Friend to Juftice, he obeyed its Dictates, and made others do fo likewife: He was devout without Oftentation, and a great Protector of the Church and Clergy; but a little ambitious; not liberal, and inclined to cruelty; and in his Father's Time had led a diffolute Life.

He died of a Bloody-Flux in Vincennes, Auguft 31, 1422, in the 34th Year of his Age, after a triumphant Reign of nine Years and five Months. He left only one Son, brought him by Catherine his Queen.

HENRY VI. furnam'd of Windfor.

This Prince was but nine Months old when he afcended the Throne. He was born at Windfor, December, 6, 1421.

He was a juft, chafte, temperate, and pious Prince; and refign'd himfelf wholly to the Difpenfations of Providence. He bore with uncommon Patience all the finifter Accidents of Life. His only Defect was a Sort of Weaknefs of Mind, which render'd him incapable of governing his Kingdom, without the Affiftance of others.

He was dethron'd in the Year 1461; but recovered his Crown in 1471; and in 1472 loft it again, together with his Life.

After this Misfortune of being dethron'd, King Henry the Queen his Confort, and the Prince of Wales his Son, fled to Scotland, and was refpectfully receiv'd in that Kingdom: But the Year following return'd to England,

in

in Hopes of concealing himself there ; not daring to reside entirely in Scotland, being in dread that the Scots would deliver him up ; but unfortunately was discover'd and seized, carried to London, and sent to the Tower ; where Edward (for his own Security) sacrificed him in the 50th Year of his Age.

EDWARD IV.

Edward IV. Son to Richard Duke of York, was crown'd June 29, 1472, after King Henry's being dethron'd : And notwithstanding he was of a surprizing, active, vigilant, and warlike Disposition, he was no sooner invested with regal Dignity, than he devoted himself intirely to his Pleasures.

He was one of the handsomest Men in all Europe. Philip de Commines pretends that he died through Grief, because Lewis the 11th prefer'd the Alliance of the House of Austria to that of his Family ; but this not probable. Some have accused his Brother the Duke of Gloucester of poisoning him : But the most likely Circumstance is, that his indulging himself at a Banquet too muck, occasion'd his Death ; for it threw him into a violent Fever, of which he died April 9, 1483, in the forty-second Year of his Age, and twenty-third of his Reign.

EDWARD V.

This unfortunate Prince was but twelve Years of Age when he began to reign ; which lasted but two Months and twelve Days ; himself, and his Brother the Duke of York, being both murder'd by the Protector, Richard Duke of Gloucester, their Uncle, who afterwards usurp'd the Crown.

They were lodg'd in the Tower, where it was customary for the Kings of England to reside before their Coronation ; and the Protector, upon the Refusal made by Sir Robert Brackenbury, Lieutenant of the Tower, to be an Accomplice of so barbarous a Scene of Villainy, gave the Government of it, for one Night only, to Sir James Tyrrel, who had suborn'd one Miles Forest, and John Dighton, who, in the Dead of Night, enter'd the Chamber where the two Princes lay, and stifled them. These shocking Circumstances were told by Tyrrel, who was afterwards executed under the Reign of Henry the Seventh.

RICHARD III.

This inhumane Wretch was, by the Consent of the People,

ple, crown'd King in 1483 ; and though his Character be well enough known by his abominable Actions, I shall describe him as follows :

He was little in Stature, very ugly, and crook'd-back'd, a great Impostor, Dissembler, Hypocrite, and cruel in his Nature ; but at the same Time was brave and sagacious, and caused Justice to be administer'd to all his Subjects, without Distinction. He was greatly skill'd in Politicks, and had a surprizing Command over himself in concealing his Intentions.

He was kill'd in the Battle of Bosworth-Field, which he fought against the Earl of Richmond, the 22d of August 1485, who was afterwards King of England.

His Body, after it was found, was carried to Leicester and expos'd to View for two Days ; then buried without any Ceremony : But Henry the Seventh, some Time after caused a Monument to be erected over his Grave.

H E N R Y VII.

After the Death of King Richard, the Earl of Richmond was crown'd King of England ; Richard leaving no legitimate Issue.

He was an able Prince ; chaste, and temperate ; an Enemy to all scandalous Vices ; assiduous in Exercises of Piety ; and caused Justice to be administer'd wherein his private Interest was not concern'd ; for he was insatiably covetous ; yet he merited the Esteem of all Europe.

He died the 22d of April 1509, of a Consumption, in the 52d Year of his Age, and 24th of his Reign ; and was interr'd in that magnificent Chapel which he erected in Westminster-Abbey, called Henry the Seventh's Chapel.

H E N R Y VIII.

Henry VIII. succeeded his Father Henry VII. and began his Reign April 22, 1509, being in the 18th Year of his Age.

He was a comely Prince ; but grew too corpulent in the latter Part of his Life. He was skilful in all bodily Exercises ; brave without Ostentation ; of a candid and frank Disposition, and liberal to Excess. He lov'd Study, and made a great Progress in the Sciences ; perfect Master of Musick ; and skilled in Philosophy and Divinity : But, on the other Hand, was inclin'd to Cruelty ; and withal, very presumptuous and lascivious.

He died of a Complication of Humours falling upon

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an old Sore in his Leg, the 28th of January, 1547, in the 56th Year of his Age, and 38th of his Reign. He left behind him two Daughters and one Son; Mary, by Catharine of Arragon; Elizabeth, by Anna Boleyn; and Edward, by Lady Jane Seymour.

EDWARD VI.

This Prince began his Reign in 1547, and though but ten Years old, was well skil.'d in the Latin and French Tongues; and had also some Knowledge of the Greek, Spanish, and Italian.

He was a great Promoter of Trade and Learning, and an Encourager of the Reformation; confirming the Grant of the King his Father, to the City of London, for Christ's, and St. Bartholomew's Hospitals; and founded himself those of Bridewell and St. Thomas's, besides several Schools: But a Consumption carried him off the 6th of July, 1553, in the 16th Year of his Age, and 6th of his Reign.

MARY.

This Princess came to the Throne after the Death of King Edward her Brother. After her Coronation, she was espoused to Philip II. King of Spain, by whom she had no Issue.

She was extremely bigotted to the Romish Religion, which she would have undoubtedly re-established, had she surviv'd.

Her natural Disposition was cruel and revengeful; and we meet with but one good Action during her Reign, viz. Her rejecting the Proposal offer'd by the Spanish Ambassador, of making herself absolute.

She died of a Dropsy the 17th of November, 1558, in the 43d Year of her Age, and in the sixth Year of her Reign.

ELIZABETH.

After the Decease of Queen Mary, the Princess Elizabeth, her Sister, ascended the Throne, in the 25th Year of her Age, 1558. She was tolerably handsome, and had a most majestick Air; but the Circumstance that endear'd her most to the common People, was a certain Affability which was natural to her, and which won her the Affection of the People.

She was Mistress of a great deal of Wit, as well as of a solid Judgment, join'd to great Œconomy; Learned,

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and fpoke feveral Languages; a great Politician, and never difclofed any of her Secrets, not even to her Favourites or chief Minifters, who always paid an implicit Obedience to her Dictates: But the Circumftances, which above all ought to gain her Efteem, is, her making the Englifh enjoy a Felicity unknown to their Anceftors.

She was never married; her Policy, and Love for Liberty, made her entertain an Averfion to the wedded State.

She died March 24, 1603, in the 70th Year of her Age, and 45th of her Reign.

J A M E S I.

James the Sixth of Scotland, and Firft of England, Son to the unfortunate Queen of Scots, fucceeded Queen Elizabeth. He was born at Edinburgh Caftle, and baptized a Roman Catholick, June 19, 1566, but afterwards educated in the Proteftant Religion.

He was a learned Prince; but made not a right Ufe of his Knowledge. He was naturally as pacific, as Queen Elizabeth was magnanimous.

A little before his Coronation, an intended Confpiracy was difcover'd, viz. To raife to the Throne Arrabella Stuart, his Coufin German; and fome of the Confpirators were executed; the famous Sir Walter Raleigh was accufed of being concern'd in it; and after a Confinement of twelve Years in the Tower, was beheaded Oct. 29, 1618.

The King died at his Palace at Theobald's of a Tertian Ague, after three Weeks Illnefs, March 27, 1625, in the 59th Year of his Age, the 22d of his Reign over Great-Britain, and 58th over Scotland.

C H A R L E S I.

This Prince, Son to King James, by Anne, Daughter to Frederick II. King of Spain, fucceeded him. He was born in Scotland, November 19, 1600, and crown'd King of Great-Britain, February 2, 1625-6.

Some Writers fay, he was religious, chafte, fober, affable, and courteous; of great Peneration, folid Judgment, and an excellent Man. On the other Hand, that he was too fond of Prerogative, and fo weak, as to let himfelf be govern'd by his Wife and Favourites; and that, by their Perfuafions, he executed feveral Things, which firft caufed his Subjects to murmur, and afterwards

to

to break out into open Rebellion, which in the End proved fatal to him, for he was brought to the Bar as a common Criminal, and fentenced (without being ſuffer'd to plead in his own Defence) to be beheaded ; which Sentence was executed three Days after it was paſs'd upon him, being January 30, 1648-9. He ſuffer'd Death with great Conſtancy, and without diſcovering the leaſt Signs of Weakneſs or Surprize : And after his Body had been expoſed to publick View for ſeveral Days, in one of the Apartments at Whitehall, was carried to Windſor, and interr'd in St. George's Chapel.

From the Death of this King until the Year 1661 there was an Interregnum ; and England was govern'd by the Parliament, which was compos'd of 144 Perſons, known by the Name of Barebone's Parliament ; Oliver Cromwell being at the Head : But they reſigning the Adminiſtration of Affairs, Oliver cauſed himſelf to be proclaim'd Protector of England, Scotland, and Ireland ; and after having eſtabliſhed his Authority upon the Ruins of the Parliament, (who were his Creatures) and made the Protectorate hereditary in his Family ; after refuſing the Crown, which the ſame Parliament offer'd him, he died of a Tertian Ague, Sept. 3, 1658.

It was allowed by all, that he was a renowned Warrior ; great Politician ; and Terror to France, Spain, and the United Provinces

After his Death his Son Richard was proclaim'd Protector ; but he did not long preſerve this Title ; for in the Year 1660, Charles, Son to the deceaſed King, was reſtor'd to the Crown.

CHARLES II.

This Prince was crowned April 23, 1661, being St. George's Day. He was liberal even to Prodigality ; extremely affable, and ſo eaſy in Converſation, that he ſeem'd deſirous of doing Good to all. To this was added a ſprightly Wit, and wonderful Conception ; and underſtood the Intereſt of his Kingdom, better than any of his Miniſters : But on the other Hand, he was too great a Lover of Eaſe ; and he was juſtly blam'd for having too great an Attachment to the fair Sex.

He died February 6, 1684-5, aged fifty-four Years, after

ter having reign'd near twenty-four since his Restoration. And tho' he openly profess'd the Protestant Religion, he nevertheless died (according to some Authors) a Roman Catholick.

JAMES II.

King Charles leaving no legitimate Issue by Catharine his Queen, Daughter to Don Juan fourth King of Portugal, his Brother James Duke of York was proclaim'd King. He was born at St. James's October 14, 1633, and crown'd April 23, 1685.

Historians, who have writ impartially, say, that he was a kind Father, a tender Husband, a good Master; and would have been a good King, had he not been misled by the wicked Ministers about him: That as his most bitter Enemies cannot deny, but he shew'd great Bravery, on several Occasions when Duke of York; so his best Friends confess, that he had more Piety than Resolution, when King of England: In a Word, that the Religion he profess'd was the Source of his Misfortunes, and the chief Cause of his being dethron'd.

He died at St. Germains in France, Sept. 6, 1701, in the 68th Year of his Age.

WILLIAM III. and MARY II.

After King James abdicated the Crown, William Naffau Prince of Orange, and his Consort Mary, Daughter to King James, were proclaim'd King and Queen of Great-Britain, the 13th of February, 1688-9 to the inexpressible Joy of the judicious and unbigotted Part of the Kingdom; and were crown'd the Eleventh of April following at Westminster, with great Magnificence. On December 28, 1694, Queen Mary died of the Small Pox.

Her Piety was solid; and an uncommon Goodness adorn'd her Soul. She had a great Sweetness of Temper, accompany'd with Majesty; and an Air of Grandeur, without the least Pride or Affectation. Her Conduct was admirable; and entertain'd a sincere Affection for the King her Husband, which he as kindly return'd. She paid an intire Submission to the Divine Will, which
she

ſhe gave convincing Proofs of in her expiring Moments; as indeed ſhe had d ne, in the whole Tenor of her Life.

The King died March 8, 1701-2, at Kenſington-Palace, in the 52d Year of his Age, and 14th of his Reign.

He was of a middling Stature, and a little round-ſhoulder'd; had an oval Face, a light brown Complexion, and a Roman Noſe; his Eyes lively, and piercing; and never look'd ſo well as on Horſe-Back; as though Nature had form'd him to command in the Field. But the Defects of his Body were compenſated by the Perfections of his Mind; being endued with a quick, ready, attentive and penetrating Genius: Of ſound Judgment; admirable Forecaſt; a ſtrong Memory, and a calm and intrepid Courage. War was his greateſt Delight; and Hunting and Shooting his uſual Diverſions. In a Word, he was one of the greateſt Men of his Age. He had declared himſelf, on all Occaſions, an Enemy to Tyranny and Oppreſſion; and, after having preſerv'd his own Country, was the Deliverer of England, and the Defender of the Liberties of Europe.

A N N E.

This Princeſs, after the Death of King William and Queen Mary her Siſter (they leaving no Iſſue) was proclaim'd and crown'd Queen of England, &c. and on the 21ſt of May, 1701-2, declar'd his Royal Highneſs George Prince of Denmark (her Royal Conſort) Lord High Admiral of England and Ireland.

This Queen, inſtead of calming all Europe, which was her Intentions, involv'd herſelf in numberleſs domeſtick Troubles, which ſoon brought her to the Grave; being ſeiz'd with a Kind of Lethargy, ſhe expir'd on the Firſt of Auguſt 1714, on which Day the Elector of Hanover was proclaim'd King.

She was virtuous, charitable, and a perfect Model of Piety; and as a Sovereign eaſy, kind, and generous. Her Majeſty was extremely regretted by her Subjects who had loved her with filial Affection during the whole Courſe of her Reign. She left no Children, though ſhe had ſix; two Sons and four Daughters.

GEORGE

GEORGE I.

This Prince, was the eldest Son of Ernest Augustus, first Duke and Elector of Brunswick Lunenburgh, by Princess Sophia Daughter to Frederick, fifth Elector Palatine, and King of Bohemia, and Princess Elizabeth, eldest Daughter of King James the First.

He was born the 28th of May, 1660; succeeded his Father in the Electorate 1698, and was at Hanover at the Death of the Queen, and proclaim'd King of England, &c. the same Day.

He embark'd for England, with the Prince Royal his Son, the 16th of September, 1714, and landed at Greenwich the 18th; and on the 20th made a magnificent Entrance into London; being attended by above 200 Coaches and Six, belonging to the Nobility, &c. The Lord Mayor and Aldermen of London attending in their Formalities.

His Majesty, in his last Visit to Hanover was taken ill on the Road between Delden and Linden; which Illness proceeded from having eat Part of a Melon, which he did not well digest. Being arrived at Linden, he was let Blood: But his Majesty being anxious to reach his Dominions, travelled on, though he was importuned to the contrary, being much indisposed: But being seiz'd, as he rode in his Coach, with a Lethargic Disorder, he reclin'd his Head on a Gentleman, who had the Honour to be with him, saying at the same Time in French, C'st fait de moy, that is, I am gone, or, it is over with me: However about Ten that Night he arrived at his Brother's, the Duke of York, in Osnaburg; and after having again been let Blood, expir'd about One next Morning, June 11, 1727, in the 68th Year of his Age, and 13th of his Reign.

GEORGE II.

As his late Majesty died Abroad, his Death was not known till the 14th of June, 1727, and his Majesty King George II. was, the next Morning, proclaimed King, and he with his Queen were crowned at Westminster, on the 11th of October.

His

His Majesty found the Nation engaged in a War with the Spaniards; but in 1729, a Peace was concluded at Seville between Great-Britain, France and Spain.

On October 29, 1739, War was declared against Spain; and on November 22, 1740, Admiral Vernon, with six Ships, took Porto Bello.

Commodore Anson sailed from England with five Men of War in 1740, and after having suffered the most dreadful Distresses, surprised and took Paita on the 12th of November, 1741, and having plundered and burnt the Town, and seiz'd several Spanish Ships, he on his Return, by the Way of the East Indies, took the Manilla Galleon, loaded with Treasure. He arrived in Enggland in 1744, with the Riches he had acquired from the Spaniards, amounting to about 400,000 l.

In 1744 War was declared against France; and in 1745, the People of New-England, assisted by ten Men of War under Commodore Warren, took Cape Breton, with the Loss of only 100 Men; but were afterwards obliged to part with it for Madrass.

On the 14th of July the young Pretender sailed to Scotland in a small Frigate, and landed there on the 27th of July. He soon obtained a considerable Force, and proceeding through several Parts of Scotland, had his Father proclaimed King, while he himself assum'd the Title of Prince Regent. He took several Places, and gained some Advantages over the King's Forces sent against him; but at Length the Duke of Cumberland went to Edinburgh, and took the Command of the Army, and on the 15th of April, came to an Engagement near Culloden House, and obtained a compleat Victory, in which about 1400 of the Rebels were killed, wounded and taken Prisoners, though the Royal Army had only 60 Men killed, and 280 wounded. The Earl of Kilmarnock, Lord Balmerino, Lord Lovat, and Mr. Radcliffe, Brother to the late Earl of Derwentwater, were afterwards beheaded for this Rebellion on Tower-hill.

Hostilities at Length, ceased in Flanders, and a general Peace was proclaimed in London, February 2, 1749. The French, however, soon broke the Peace by erecting Forts on the Back of the British Settlements in America, and in 1754, attempted to seize Nova Scotia: These Depredations

predations brought on several Engagements which were attended with various Success.

Mean while the French landed 16,000 Men in Minorca, which was defended by Gen. Blakeney. His Majesty declared War against France on the 17th of May, 1756, and sent Admiral Byng with a strong Fleet to the Relief of Minorca; but he neglecting to fulfil his Instructions, the Place was lost, and he was tried and shot at Portsmouth.

During these Transactions Col. Clive distinguished himself in the East Indies; and all the Towns and Factories belonging to the French on the Coast of Coromandel, except only Pondicherry, were in a few Years taken by the English.

In 1758 the Duke of Marlborough landed near St. Maloes in France, burnt many Ships, with a great Quantity of Naval Stores, Lieut. Gen. Bligh and Capt. (now Lord) How took Cherburgh and demolished its Fortifications. Soon after Capt. Marsh took Senegal, and Com. Keppel took the Island of Goree, on the Coast of Africa. On the 26th of July, Cape Breton was again taken by Gen. Amherst and Admiral Boscawen. Soon after Fort Frontenac surrendered to Lieut. Gen. Broadstreet and Fort du Quesne to Gen. Forbes.

On May 1, 1759, the valuable Island of Guadaloupe surrendered to the English, and the same Month Marigalante, Santos, and Deseada, became subject to England. And the same Year the French lost Quebec, the Capital of Canada.

In 1760, Thurot landed with three Frigates in the Bay of Carrickfergus; they were all taken by Capt. Elliot. And on Sept. 8, Montreal and all Canada submitted to the English. But after these glorious Conquests his Majesty King George the II. to the inexpressible Grief of his People, died at Kensington, on the 25th of October, in the 77th Year of his Age and 34th of his Reign; and the next Day his present most gracious Majesty was proclaimed King by the Name of George III.

The Reign of George II. was distinguished by a Variety of important Events, and chequered with a Vicissitude of Character and Fortune. He was in Person rather lower than the middle Size, well shaped, erect, with Eyes remarkably prominent, a high Nose, and fair Complexion.

plexion. In his Difposition he is faid to have been hafty, prone to Anger, efpecially in his Youth, yet foon appeafed; otherwife mild, moderate, and humane; in his Way of Living temperate, regular, and fo methodical in every Branch of private Œconomy, that his Attention defcended to Objects which a great King (perhaps) had better overlook. He was fond of military Pomp and Parade; and perfonally brave. He loved War as a Soldier; he ftudied it as a Science; and correfponded on the Subject with fome of the greateft Officers whom Germany had produced. The Extent of his Underftanding, and the Splendor of his Virtue, we fhall not prefume to afcertain, nor attempt to difplay; we rather with for Opportunities to expatiate on his Munificence and Liberality; his generous Regard to Genius and Learning; his royal Encouragement and Protection of thofe Arts, by which a Nation is at once benefited and adorned.

To innoculate FRUIT-TREES.

ABOUT *Midfummer*, or a Month before or after, take off a vigorous Shoot from a Tree you would propagate; then make Choice of a Stock about three or four Years Growth, and in a fmooth Part of it make a downright flit in the Bark, a little above an Inch long, and another crofswife at the Bottom of that, to give Way to the Opening of the Bark; then with your Penknife gently loofen the Bark from the Wood on both Sides, beginning at the Bottom; next prepare your Bud, by cutting it off with your Knife, entering pretty deep into the Wood as much above as below the Bud, to the Length of the Slit in the Stock; after the Bud is thus prepared, with the Point of your Knife and your Thumb take out the woody Part of it, carefully preferving the Eye of the Bud; then put your Bud in between the Bark and the Wood of the Stock at the crofs Slit, leading it upward by the Stalk, where the Leaf grew, till it exactly clofes; then bind it about with coarfe Woollen Yarn, the better to make all Parts of it clofe regularly, and the Bud incorporate with the Stocks, and the Operation is done.

The Bud will be incorporated in about three Weeks Time, and then you muft loofen the Yarn, that it may not gall the Place too much; the quicker this is done the better,

ter. You may put two or three Buds into one Stock of *Peaches* and *Nectarines*, that if one don't succeed another may; and if your Buds innoculated in the Month of *June*, or before, don't hit, you may make a second Attempt the same Year, and on the same Stock, with better Success. Let all Buds be taken off of the vigorous growing Shoot, and used immediately.

To graff FRUIT-TREES.

Graffing (or Ingraffing, or Grafting) is of four Sorts. 1. In the *Cleft*. 2. In the *Bark*. 3. By *Approach*. And 4. *Whip-Graffing*. Of each of these in order. 1. *Graffing in the Cleft, or Slit Graffing*. This is performed on the *Pear*, *Cherry* and *Plumb* Stocks. After you have chose your Stock, cut off the Head in a smooth Place, sloping; then even the Top horizontally with your Knife; this being done make a Slit near two Inches deep down the Middle of the *Stock*, with a large strong Penknife; then prepare your Cyon (taken from a vigorous Shoot of the foregoing Year, which was prepared in *January*) sloping it on each Side, from a Bud or Eye, but leaving it thiner on that Side which goes into the Stock than on the Outside, so that it may conform itself to the Slit in the Stock; then place the Cyon in the Stock, and close the Bark of both exactly. After this is done, temper Clay and short Hay together, and putting it round the Stock and the lower Part of the Cyon, but so as not to disturb the Cyon, which must be left with more than three or four Eyes above the Stock. In case the Stock be large, you may put two Cyons in the Cleft; one on each Side. If the Stock be very large, use a Mallet and large Knife to make a Slit or Cleft. Let not your Cyons be loose nor pinched.

2. *To graff in the Bark*. This is only used for *Apples*; and you are to cut the Head of the Stock as in the former, and instead of slitting the Stock, slit only the Bark a little more than an Inch on the South-West Side, as long as the sloped Part of the Cyon; at the Top of the Slit loosen the Bark with your Knife, then with a smooth Instrument of Ivory or hard Wood cut sloping as the Cyon, make Room for the Cyon, by thrusting it down between the Bark and the Wood of the Stock, where it was slit; next take your Cyon (being prepared with a flat Slope about an Inch long, ending in a Point, and begun from the Back of an Eye) and put into the Stock, thrusting the Top of the Slope as

low

low as the Top Surface of the Stock; then order the Bark on each Side the Cyon, that it may fall close to the Stock; then clay it over as before.

3. *Graffing by Approach* or *Inarching.* This is performed where the Stock grows so near another Tree whose Fruit you would propagate, that it may be joined with a Branch of that Tree, by cutting the Sides of the Branch and Stock about three Inches long and so fitting them, that the Passages of the Sap may meet; in which Posture let them be bound and clayed. When they are cemented, cut off the Head of the Stock, about four Inches above the Binding, and in *March* following cut off the Stub that was left of the Stock, and then close the graffed Place, that it may subsist by the Stock only. This *Graffing* is also performed by cutting off the Head of the Stock at first, sloping it about two Inches long, and joining the Cyon thereto. This Manner of *Graffing* agrees best with *Vines, Oranges, Pomegranates,* and such like.

4. *Whip Graffing.* This is where the Stock and Cyon are of the same Bigness; the Stock must be sloped an Inch or more, and also the Cyon; and then one is tied upon the other; or else a Shoulder may be made on the Cyon, to suit with which, the Top of the Stock should be cut; then bind them together, and clay them.

All these four Kinds of *Graffing* are performed chiefly in the Month of *February.*

Of Pruning FRUIT-TREES.

When a Tree is planted, and has produced two well disposed Branches, with some weak Ones intermixed, they are all to be shortened equally, to the Length of five or six Inches; and if the Position of the two Branches be irregular, there must be only one left to begin the Formation of the Figure of the Tree. It sometimes happens, that a Tree will shoot five, six, or seven Branches, the first Year, in which Case three or four only of the best Branches are to be preserved. A Multitude of Branches the first Year, is not always a Sign of Vigour; for they sometimes prove weak, occasioned by the Infirmity of the Roots: But in the *Pruning,* generally a vigorous Tree cannot have too many Branches, if they are well disposed; nor a weak Tree have too few. The Sap of all Trees must be kept in due Bounds, and a greater Liberty is to be allowed to strong Trees than weak Ones; For which Reason, strong

vigorous

vigorous Branches, are left a greater Length than feeble Ones, and it is beſt to prune weak, ſickly Trees, early, that the Sap may not waſte itſelf too much.

The moſt ſeaſonable Time for this Work, is about the Month of *February*; but the more luxuriant a Tree is, the later it is pruned the better; and in ſuch a Caſe, it is not too late to do it after the Tree has begun to ſhoot. Some Trees (eſpecially the *Vine*) require ſeveral Prunings in the Year.

A ſhort Account of the Britiſh Plantations.
H U D S O N's B A Y,

A Very cold Country, and but thinly peopled with *Indians*. The *Engliſh* have a Fort or two on the Bottom and Weſt Side of the Bay, for the Sake of Trade with the Natives for Skins, which are chiefly Beaver, value about 200,000 *£. Sterling, per Annum*.

N E W F O U N D L A N D,

A large Iſland, cold **and barren**; the Settlements and Fortreſſes few, and made **only for** the Sake of the Fiſhery upon the Coaſts, which is the greateſt in the World; the *Engliſh, French*, &c. loading near 600 Sail yearly with Cod-fiſh, which is carried to the *Mediterranean*, and other Parts of *Europe*. The Fiſhery in theſe Seas is an inexhauſtible Fund of Wealth, and the Poſſeſſion of it deemed preferable to the Mines of *Peru:* It breeds great Numbers of hardy Seamen.

C A N A D A,

Of which *Quebeck* is the Capital, was firſt ſettled by the *French*, and continued in their Poſſeſſion until the 14th of *September*, in the Year 1759, when it was taken by the *Engliſh* under the Command of General *Wolf*, who was killed in the glorious Conqueſt, and *Montreal* ſurrendered to General *Amherſt* the 7th of *September* following. In the Year 1753, *Canada* had not more than 45,000 Inhabitants, but when it was given up to the *Engliſh* 19,650 Men were found capable of bearing Arms, beſides the Clergy, and Labourers ſufficient to carry on their Plantation Work. The whole Country was ceded to *Great-Britain* by the Definitive Treaty of Peace concluded at *Paris* the 10th of *Feb.* 1763. Little can be ſaid with Regard to the Fertility of the Soil, the Inhabitants ſeldom raiſe Food ſufficient for themſelves, tho' they abound in Horſes and Neat Cattle.

N O V A-

N O V A - S C O T I A, or *A C A D I A,*

A fine, fertile Country, but not hitherto much cultivated. Its Coaſts have many good Harbours, and Plenty of Fiſh. The Government is *Engliſh,* but moſt of the Inhabitants *French,* who ſubmitted in the laſt War, on Condition of retaining their Poſſeſſions, and remaining Neuter in all future Wars between the two Nations. *Annapolis Royal* was the Capital, a fortified Town, with an *Engliſh* Garriſon. The Iſlands of *Cape-Breton,* belonging to this Territory, were given to *France* at the Peace of *Utrecht,* on which they built *Loviſburg,* and fortified it with incredible Art and Expence; but in the late War, it was reduced and taken by the Wiſdom of Governor SHIRLEY, and the Bravery of his *New-England* Troops, under General PEPPERRELL, countenanced by a Squadron of Britiſh Ships, commanded by the late active, vigilant and ſucceſsful Commodore WARREN. At the Peace it was reſtored to *France,* and the *Engliſh* have ſince built *Halifax* on *Chebouctou* Harbour; but *Cape-Breton* was again retaken from the *French* in the Year 1759, by *Amherſt, Wolf* and *Boſcawen.*

N E W - E N G L A N D,

Comprehends four ſeveral Governments, or Colonies; 1. The *Maſſachuſetts.* 2. *New-Hampſhire.* 3. *Connecticut.* 4. *Rhode-Iſland.* The Climate is healthful; the People hardy, induſtrious and ſober; the Laws and Government good; but the Soil generally not very fertile, and there being no Staple Commodity for Exportation, the Country is poor, and under great Difficulties to pay for what it wants from abroad. There are many fine Habours and Plenty of Fiſh on the Coaſts, a great Number of pretty Towns, in every one of which is a Free School; BOSTON, the Capital, is eſteem'd at preſent the greateſt Town in *North-America,* and the beſt govern'd. *Portſmouth* is the chief Town in *New-Hampſhire. Newport* the Capital of *Rhode-Iſland* Government; and *Hartford* of *Connecticut.* In the two laſt named Governments they annually elect their Governors, *&c.* In the two former the Governors are appointed by the Crown. In *Rhode-Iſland* there is the greateſt Liberty in Matters of Religion. Their Money is Paper, continually decreaſing in Value; Silver and Gold, when any appears among them, is bought up and remitted to *England.* Their firſt Settlement began about 1620. 'Tis ſuppoſed the

<div align="right">diſciplin'd</div>

difciplin'd Militia in the four Governments make near 200,000 Men.

NEW-YORK,

Is a Royal Government; both Governor and Council being appointed by the Crown. The People chufe the Affembly. It has not much Territory, and does not people very faft, being hindered, fome fay, by the exorbitant Grants of Lands made to particular Perfons, who will not divide and fell, but keep it for their Pofterity. The Capital NEW-YORK, is feated at the Mouth of *Hudfon*'s River, very convenient for Trade, and makes a beautiful Appearance. The Inhabitans, a Mixture of *Englifh, Low-Dutch,* and *French Proteftants,* are a genteel, generous People. The Produce Wheat, Bread, and Flóur. The Money Gold and Silver, mixed with Paper. The firft Settlement by the *Dutch* about the fame Time with that of *New-England* by the *Englifh.*

NEW-JERSEY,

A flourifhing Colony, fituated between *New-York* and *Pennfylvania.* The Soil is in many Parts very fertile, producing all Sorts of Grain, &c. The Government like that of *New-York.* The chief Towns are *Burlington, Amboy, Brunfwick* and *Trenton.* The Country in general well timber'd and water'd, and inhabited by a very good Sort of People.

PENNSYLVANIA,

One of the happieft Countries at this Time in the World; God grant it may long fo continue.

MARYLAND and VIRGINIA,

Pleafant and fertile Countries. Their chief Produce Tobacco. The People remarkable for their Hofpitality. The Settlement of *Maryland* began about 1631; that of *Virginia* 30 or 40 Years before.——The Governments of both Colonies are by Governor, Council and Affembly, but the Laws of *Virginia,* are faid to be the moft favourable for the People. No Countries in the World are better accommodated with navigable Waters.

NORTH and SOUTH-CAROLINA'S,

Are yet but thinly peopled. The Climate temperate; but the Air, in the low, flat, Country, where the principal Settlements have hitherto been made, not healthful. Their chief Produce is Rice, Pitch, Tar and Turpentine. Back towards the Mountains the Land is faid to be equally fertile, and the Air more wholefome, fo that a fine Country

may

may be expected there in Time. The first Settlement of the *Carolina*'s was about the Year 1680.

GEORGIA,

A new, but declining Colony. There are few Inhabitants at present besides the Soldiery, who are maintained there by *Great-Britain*.

AUGUSTINE, or EAST FLORIDA,

Ceded to *Great-Britain* by the *Spaniards* at the late Treaty of Peace, bounded towards the North by the Colony of *Georgia*, to the East and South by the *Atlantic* Ocean and the Gulph of *Florida*, and on the West by the River *Apalachicola*.

PENSACOLA, or WEST FLORIDA,

Is bounded on the East by the River *Apalachicola*, on the South by the Gulph of *Mexico* to the Lake *Pontchartrain*, on one of the Mouths of the *Missisippi*. This great River formed its Boundary to the West unto the 31st Degree of Latitude, from which a Line was struck across the Northern Limit due East, until it met the above mentioned River *Apalachicola*.

BERMUDAS,

First settled in 1612. No Part of the World enjoys a purer Air, or more temperate Climate than these Islands, so that for Health they are reckoned the *Montpelier* of *America*. They are situated in Lat. 32 Deg. 30 Min. N. above 200 Leagues from the Continent.

JAMAICA,

Was taken from the *Spaniards* in 1655. A wealthy Island, but unhealthy, and subject to Earthquakes.

LEEWARD ISLANDS,

Were settled by the *English*, viz. *Antigua* in 1666. *Montserat* in 1632. *Nevis* in 1628. *St. Christophers* in 1626. *Barbuda* in 1627. *Anguillia* in 1630. The chief Island and Seat of Government is ANTIGUA.

BARBADOS,

Was settled about the Year 1625. The Produce of this and the other *West-India* Islands is chiefly Sugar, Rum, &c. The Labour chiefly done by Slaves, as in *Maryland, Virginia* and *Carolina:* Their Governments generally much alike, by a Governor, Council and Assembly. The people rich, genteel, generous and hospitable. The Trade of the Colonies with one another and *Great-Britain*, employs a vast Number of Ships and Seamen, And most of these

thofe on the Continent encreafe continually in People, particularly *Pennfylvania.*

The FAMILY'S BEST COMPANION ; *giving Inftructions how to pickle and preferve ; to make divers Sorts of Wines of our Product ; together with many excellent and approved Medicines, Salves,* &c. *neceffary in all Families.*

Of Pickling, Preferving, Candying, &c.
To Pickle Cucumbers.

WASH them and dry them in a Cloth ; then take Water, Vinegar, Salt, Fennel Tops, fome Dill Tops, and a little Mace ; make it fharp enough to the Tafte ; then boil it a while ; then take it off and let it ftand till cold ; then put in the Cucumbers, and ftop them down clofe ; and within a Week they will be fit to eat.

To pickle Cucumbers green.

Take two Quarts of Verjuice or Vinegar, and a Gallon of fair Water, a Pint of Bay falt, a Handful of green Fennel or Dill ; boil it a little, and when cold, put it into a Barrel, and then put the Cucumbers to the Pickle, and you may keep them all the Year.

To pickle French Beans.

Take them before they are ripe, and cut off the Stalks ; then take good Wine Vinegar, and boil with Pepper and Salt ; feafon them to your Palate, and let it ftand till cold ; then take the Beans, and put them into a Pot, placing Dill between the Layers, and then put in the Pickle, and cover them clofe for three Weeks ; then take the Pickle, and boil and put it to the Beans boiling hot ; cover them clofe again, and, when cold, they will be fit to eat.

Or *French* Beans may be pickled thus : Take your Beans and ftring them, boil them tender, then take them off, and let them ftand till cold, then put them into Pickle of Beer, Vinegar, Pepper, Salt, Cloves, Mace, and a little Ginger.

To pickle Eldern, or any other Buds of Trees.

Give them one or two Walms with Vinegar, Salt, whole Pepper, long Mace, and a little Lemon Peel in Pieces ; then drain them, and let the Buds and Liquor cool feparately ; afterwards put them into a Pot, and cover them with your Pickle.

To pickle Walnuts to eat like Mangoes.

Take green Walnuts before the Shell is grown to any Hardnefs in them ; pick them from the Stalks, and put

them

them into cold Water, and set them on a gentle Fire till the outward Skin begins to peel off; then with coarse Cloths wipe it off; then put them into a Pot, and put Water and Salt therein, shifting it once a Day for ten Days, till the Bitterness and Discolouring of the Water be gone; then take a good Quantity of Mustard-seed, which beat up with Vinegar, till it becomes coarse Mustard; then take some Cloves of Garlick, some Ginger, and a little beaten Cloves and Mace; make a Hole in each Nut, and put in a little of this; then take White-wine Vinegar, and boil them together, which put to the Nuts boiling hot, with some Pepper, Ginger, Cloves and Mace, as also some of the Mustard and Garlick, which keep close stopped for Use.

To pickle Mushrooms.

First blanch them over the Crowns, and barb them beneath; then put them into a Pan of boiling Water, then take them forth, and let them drain: when they are cold, put them into your Pot or Glass, and put to them Cloves, Mace, Ginger, Nutmegs and whole Pepper; then take White-wine, a little Vinegar and Salt: So pour the Liquor into the Mushrooms, and stop them close for Use.

To pickle any Sort of Flowers for Sallads, as Clove Gilly Flowers, &c.

Put them into a Gally-pot, with as much Sugar as they weigh; fill them with Wine Vinegar: To a Pint of Vinegar, a Pound of Sugar.

To pickle Samphire, Broom Buds, Ashen-Keys, Purslain, &c.

Take Samphire, and pick the Branches from the dead Leaves; then lay it in a Pot, and make a strong Brine of Water, or Bay salt; in the Boiling scum it clean; being boiled, and cold, put it to the Samphire; cover it, and keep it for all the Year; and when there is Occasion to use it, take and boil it in fair Water, but the Water must boil before you put it in; when it is boiled, and become green, let it cool; then take it out, and put it into a wide mouth'd Glass, and put strong Wine Vinegar to it, and keep it close for Use.

To pickle Lemon and Orange Peel.

Boil them in Vinegar and Sugar, and put them into the same Pickle: Observe to cut them in small long Thongs, the Length of Half the Peel of your Lemon: it ought to be

be boil'd in Water before it is boild in Vinegar and Sugar.

To preserve green Apricots.

Take them when they are small and tender; peel them and put them in hot Water, but let them not boil; let them lie there till they begin to be green, then take them out, and put them in cold Water, then boil your Sugar, and let your Apricots run a little of the Water from them; then put them into the Sugar, and let them boil till the Syrup becomes thick; then put them into an earthen Pan, and let them remain there a Week; then put them into a Preserving Pan, and make them boil again till the Syrup grows thick; then put them once more into an Earthen Pan, and let them stand till they are cold; then take them out of their Syrup, and lay them on your Ardoise; then dry them in your Stove, and turn them often till dry; then put them in Boxes on Paper.

To preserve Fruit Green.

Take Pippins, Apricots, Pears, Plumbs or Peaches, when they are green; scald them in hot Water, and peel them; then put them into another Water, not so hot as the first; then boil them very tender, and take the Weight of them in Sugar, and put to them as much Water as will make a Syrup to cover them; then boil them somewhat leisurely and take them up; then boil the Syrup till it be somewhat thick, and, when cold, put them together.

To preserve Rasberries.

Take good Rasberries that are not too ripe, but very whole; take away the Stalks, and put them into a flat bottomed Earthen Pan; boil Sugar, and pour it over your Rasberries, then let them stand to be cool, and when they are cold pour them softly into your preserving Pan, and let them boil till their Syrup be boiled pretty thick; scum them very well in the boiling; this done put them in Pots, and, when cold, cover them up close for Use.

To preserve Barberries.

Take one Pound of Barberries pick'd from the Stalks, put them into a Pottle Pet, and set it in a Brass Pot full of hot Water, and when they be stewed, strain them, and put to the Barberries one Pound ½ of Sugar, and to them put a Pint of red Rose Water, and boil them a little; then take Half a Pound of the fairest Clusters of Barberries you can

get;

get, and dip them in the Syrup while it is boiling; then take the Barberries out, and boil the Syrup till it is thick, and, when cold, put them into Gally-pots or Glasses with the Syrup.

To preserve Currants.

Lay a Layer of Currants, and then a Layer of Sugar, and so boil as before prescribed for Rasberries; scum them in boiling till the Syrup is pretty thick; then take them off, and, when they are cold, put them in Gally-pots or Glasses closely stopped.

To preserve Walnuts Green.

Boil the Wallnuts till the Water tastes bitter, then take them off, and put them in cold Water; peel off the Bark, and weigh as much Sugar as they weigh, and a little more Water than will wet the Sugar; set them on the Fire, and when they boil up, take them off, and let them stand two Days, and then boil them again once more.

To preserve Grapes.

Stamp and strain them; let them settle a while; before you wet a Pound of Sugar, or Grapes with the Juice, stone the Grapes, and save the Juice in the Stoning; take them off, and put them up,

To preserve Cherries.

First take some of the worst Cherries, and boil them in fair Water, and when the Liquor is well coloured, strain it; then take some of the best Cherries, with their Weight in beaten Sugar; then lay one Layer of Sugar, and another of Cherries, till all are laid in the preserving Pan; then pour a little Liquor of the worst Cherries into it, and boil the Cherries till they are well colour'd; then take them up, and boil the Syrup till it will button on the Side of a Plate, and when they are cold, put them up in a Glass close covered for Use.

To candy Cherries.

Take Cherries before they be full ripe, and take out the Stones; then take clarified Sugar boil'd to a Height and pour it on them.

To candy Pears, Plumbs, Apricots, &c.

Take them and give every one a Cut half through; then cast Sugar on them, and bake them in an Oven, as hot as for Manchet, close stopped; let them stand Half an Hour, then lay them one by one upon Glass Plates to dry, and

they

they will appear very fine and clear : In this Manner you may candy any other Fruit.

To candy Flowers.

Pick them very clean, and to every Ounce of Flowers, put two Ounces of hard Sugar, and one Ounce of Sugar-candy, and diffolve them in Rofe Water ; then boil them, till they come to Sugar again, and when it is almoft cold, put in your Flowers, and ftir them together, &c.

Of making fundry Sorts of Wines.

Currant Wine.

PICK the Currants (when they are full ripe) clean from the Stalks, then put them into an Earthen Veffel, and pour on them fair and clean hot Water, that is, a Quart of Water to a Gallon of Currants ; then bruife or mafh them together, and let them ftand and ferment ; then cover them for twelve Hours, ftrain them through fine Linen into a large earthen Crock (as they fay in *Suffex)* and then put the Liquor into a Cafk, and thereto put a little Ale-Yeft, and when worked and fettled, bottle it off : This is exceeding pleafant, and very wholefome for cooling the Blood : In a Week's Time it will be fit for bottling.

Artificial Claret.

Take fix Gallons of Water, two Gallons of the beft Cyder, and thereto put eight Pounds of the beft Malaga Raifins bruifed ; let them ftand clofe covered in a warm Place for two Weeks, ftirring them every two Days well together ; then prefs out the Liquor into the Veffel again, and add to it a Quart of the Juice of Barberries, and a Pint of the Juice of Bramble-berries, or Rafberries (which perhaps is the beft) to which put a Pint of the Juice of Black Cherries ; work it up with Muftard Seed covered with Bread Pafte for three or four Days by the Fire-fide ; after which let it ftand a Week, then bottle it off, and it will become near as good as, if not exceed, common Claret.

Goofberry Wine.

The beft Way is to take to every three Pounds of Fruit, one Pound of Sugar, and a Quart of fair Water ; boil the Water very well, but you muft put the aforefaid Quantity of Sugar when it is boiled ; bruife the Fruit, and fteep it Twenty-four Hours in the Water, ftir it fometimes, then

<div align="right">ftrain</div>

ſtrain it off, and put the Sugar to it, and let it ſtand in a Runlet cloſe ſtopped for a Fornight; then draw it off, and ſet it up in a cool Cellar, and in two Montns it will be fit to drink.

Raſberry Wine.

Take the Raſberries clear from the Stalks; to a Gallon of which put a Bottle of White Wine, and let them infuſe in an earthen Veſſel two or three Days cloſe covered; then bruiſe the Berries in the Wine, and ſtrain thro' fine Linen gently; then let it ſimmer over a moderate Fire, ſcum off the Froth, and then ſtrain it again, and with a Quarter of a Pound of Loaf Sugar, to a Gallon, let it ſettle; then in Half a Pint of White Wine boil about an Ounce of well-ſcented Cinnamon, and a little Mace, and put the Wine ſtrained from the Spice into it, and bottle it up.

Damſon Wine.

Dry the Damſons in a Oven after you have drawn your Bread; then to every Quart of Damſons put three Quarts of fair Water, but firſt boil it very well; then put the Water and Damſons into a Runlet, with Sugar; and having ſtood a Time ſufficient bottle it off.

Wine of Grapes.

When they are fully ripe, in a dry Day, pick of thoſe Grapes that are ripeſt, and ſqueeze them in a Fat or Preſs made for that Purpoſe, in which muſt be a fine Canvas Bag to contain the Grapes; and when in the Preſs, do not ſqueeze them ſo hard as to break the Stones, if you can help it, becauſe the bruiſed Stones will give the Wine a diſagreeable Taſte; then ſtrain it well, and let it ſettle on the Lees, in ſuch a Caſk or Veſſel as you may draw it off without raiſing the Bottom; then ſeaſon a Caſk well with ſome ſcalding Water, and dry it, or ſcent it with a linen Rag dipped in Brimſtone, by fixing it at the Bouge, by the Bung or Cork; then put the Wine into it, and ſtop it cloſe for 48 Hours; then give it Vent at the Bouge, with a Hole made with a Gimblet; in which put a Peg or Faucet, that may eaſily be moved with the Fingers; then in about two Days Time cloſe it up; and in about two or three Months Time it will be fit for drinking, and prove almoſt as good as *French* Wine.

Wine of Strawberries or Raſberries.

Maſh the Berries and put them into a linen Bag, as aboveſaid

bovesaid for the Grapes, and squeeze them into a Cask, and then let it work as aforesaid in the Grape Receipt, &c. In this Manner may Cherry Wine be made; but then you must break the Stones, contrary to what was said before concerning the Grapes.

A short Way for Cherry Wine.

Squeeze the Juice of Cherries into a Cask, and thereto put a small Quantity of Sugar corresponding to the Quantity of Juice, and when stood a Month, it will be pleasant Liquor.

Black Cherry Wine.

In the same Manner, take a Gallon or more, of the Juice of Black Cherries, and keep it in a Vessel close stopped till it works; and, after it is fine, add an Ounce of Sugar to each Quart, and a Pint of White Wine.

To make Cyder.

Grind, stamp or pound your Apples, and put them into a Press, and squeeze them through hair Bags into a Tub; then let it settle, and, according to your Quantity of Juice, put in some Sugar at Discretion; then work it up with Ale-Yest, and let it stand a Week; then prepare your Vessels according to the Quantity, clean and dry; then put it up; after which put into a Bag two Pounds of stoned Raisins, two Ounces of whole Ginger, and two Ounces of Isinglass, and see it tied tight with a strong String fixed without side the Barrel, that the Bag may sink to the Bottom: and after two Months it will be fit for Use.

Mead.

Take six Gallons of Water, and thereto put six Quarts of Honey, stirring it till the Honey be thoroughly mixed; then set it over the Fire, and, when ready to boil, scum it very well, then put to it one Quarter of an Ounce of Mace, and as much Ginger, and Half an Ounce of Nutmegs, some sweet Marjoram, Thyme, Sweet Briar, together a Handful, then boil them in the Liquid, then let it stand by till cold, and then barrel it up for Use.

Of Jellies.

Let them be of Apples, Currants, Rasberries, &c. Take out the clear Liquor (when squeezed) and boil it with Sugar till it is as thick as a Jelly, then put it up in Glasses.

Every

Every Man his own DOCTOR : Or the
POOR PLANTER'S PHYSICIAN.

[Wrote by a Gentleman in Virginia, *and first printed there.]*

THE most acceptable Service we can render to GOD is Beneficence to *Man.* There are three Ways of benefiting our Fellow Creatures. We may be useful to their Souls by good Instruction, and good Example : We may be helpful to their Bodies, by feeding the Hungry, cloathing the Naked, and prescribing easy Remedies to the Sick : We can aid them in their Fortunes, by encouraging of Industry, by relieving the Distressed, and doing all the kind Offices we are able to our Neighbours. These are the several Ways of improving the Talents our Maker has entrusted us with ; and we must every one expect hereafter to give an Account how we have employed them.

I wish it were in my Power to serve Mankind, more than I do, in each of these Particulars ; but the gracious Acceptance of the Widow's Offering, encourages me also to cast in my Mite into the Treasury. I publish this Treatise to lead the poorer Sort into the *pleasant Paths of Health* ; and when they have the Misfortune to be *sick,* to shew them the cheapest and easiest Ways of *getting well* again.

Our Country is unhappily subject to several very sharp Distempers. The Multitude of Marshes, Swamps, and great Waters, send forth so many Fogs, and Exhalations, that the Air is continually damp with them : This, in Spight of all our Precautions, is apt to shut up the Pores at once, and hinder insensible Perspiration. From hence proceed *Fevers, Coughs, Quinsies, Pleurisies* and *Consumptions,* with a dismal Train of other Diseases, which make as fatal Havock here, in Proportion to our Number, as the *Plague* does in the *Eastern* Parts of the World.

In the mean Time, this is a cruel Check to the Growth of an Infant Colony, which otherwise, by the Fruitfulness of our Women, and the great Number of Recruits sent from our Mother Country, would in a few Years, grow populous, and consequently considerable.

It is impossible to see these Calamities return every Year, without the tenderest Commiseration. Certainly nothing can be more melancholly, than to have so many poor People

ple perifh, purely for want of ufing timely Means for their Prefervation. They neglect to take any Remedy till their Cafe is grown defperate, and Death begins to glare them in the Face. They confider not, that a moderate Skill may recover a Patient in the Beginning of a Diftemper, while he has Strength to go thro' all the necessary Operations, when the whole *College* would not be able to fave him, after his Spirits are funk, and all the Principles of Life near extinguifhed.

This unhappy Temper occafions a great deal of Mortality: And what makes the Misfortune the greater, is that it falls heavieft on the younger Sort, who are moft liable to hurrying Diftempers. Indeed, fome would be glad of Affiftance, if they did not think the Remedy near as bad as the Difeafe: For our *Doctors* are commonly fo exorbitant in their Fees, whether they kill or cure, that the Patient had rather truft to his Conftitution, than run the Rifque of beggaring his Family.

Thefe Confiderations made me account it a Work of great Charity and publick Spirit, to communicate to the poor Inhabitants of this Colony, a fafe Method of curing themfelves, when they fhall be fo unhappy as to fall into any of our common Maladies. And for their greater Encouragement, the Remedies I fhall prefcribe, may be procured with little Trouble and Expence, being, for the moft Part, fuch as grow at their own Doors, or may be eafily propagated.

But notwithftanding this well-meaning Effay has really no other View than the Love of Mankind, yet it could not efcape being grofsly attack'd by fome *Fyfts* of the Faculty. However like *Æfop*'s Viper, while they endeavour to make a venemous Impreffion on the File, they only broke their own Teeth. In the mean Time, whatever my Obligations may be to 'em for their *Scurrility*, the honeft *Printer* has reafon to thank them, becaufe nothing contributes fo certainly to the quick Sale of any Performance, as a ftupid Anfwer to it.

Providence has been fo good, as to furnifh almoft every Country with Medicines proper for the Diftempers incident to the Climate; and fuch domeftick Remedies are always fufficient for the Poor, who live upon homely Fare, and for the Temperate, who make a right Ufe of GOD's Bleffings. Their Cafes are feldom complicated, and pro-

ceed,

ceed, for the moſt Part, from Cold, or ſome ſlight Tranſgreſſion. In ſuch Ailments, the Symptoms cannot eaſily be miſtaken, nor is the Cure difficult; all the *Secret* lies *in taking the Diſtemper in Time:* And this will be the more neceſſary, becauſe moſt Diſeaſes that happen from Cold, are exceedingly violent, and call aloud for ſpeedy Aſſiſtance.

I muſt therefore conjure my dear Countryfolks to begin with themſelves as ſoon as they can diſtinguiſh what Sickneſs they have, while Nature is ſtrong and able to co-operate with the Medicines they take. Nor can we hope, that Heaven will aſſiſt us in our Calamities, unleſs we endeavour, at the ſame Time, to aſſiſt ourſelves.

In ſetting down the following Preſcriptions, I have been cautious of talking like an *Apothecary*; that is, of uſing hard Words, that perhaps neither my Patient, nor I myſelf underſtand. Nor have I taken them lightly upon Truſt, but am able to recommend moſt of them upon more than twenty Years Experience; and for the reſt, I have credible Authority. In the mean Time, I hope none will object, like *Naaman*, the *Syrian*, to the Eaſineſs of any of theſe Remedies; but rather rejoice, that they can have the greateſt of all Bleſſings ſo very cheap. And in Truth, People muſt love Difficulty extremely, to ſlight Health, as they would a Miſtreſs, for being gained with little Trouble.

That this *Treatiſe* may be as uſeful as poſſible, I have made ſome ſmall Additions here and there in this Edition, but ſo as neither to ſwell the Book, or enhance the Price. And as the whole is deſign'd for thoſe who can't afford to die by the Hand of a *Doctor*, I hope the Legitimate Sons of *Eſculapius* will be the more merciful. But as for the ſpurious Breed, they have no Right to find Fault with what they can't mend, and it will be prudent to make a Secret of their own Ignorance.

Before I mention the Cure, I ſhall endeavour to deſcribe the *Symptoms* of each Diſtemper, in ſo plain a Manner, that any Perſon may be Maſter of his own Caſe, if he will but attend carefully to what he feels; otherwiſe he might miſtake his Illneſs, and apply an improper Remedy. I ſhall also recommend the *Diet* fitteſt to be uſed in each Caſe; which often contributes more to the Patient's Recovery, than his *Phyſick:* At the ſame Time, he ſhall have my beſt Advice, to prevent every particular Ailment;

which

which will be happier for him, than to know how to cure it.

C O U G H.

I SHALL begin with a *Cough*, which is the Foundation of many bad Distempers, and therefore should be taken Care of as soon as possible. It may be cured in the Beginning with riding moderately on Horseback every Day, and only taking a little *Ground Ivy Tea* sweeten'd with *Syrup* of *Horehound*, at Night when you go to Bed. But in Case it be violent, it will be proper to *bleed* eight Ounces, and be constant in the Use of the other *Remedies*. In the mean while, you must use a spare and cooling *Diet*, with out either Flesh or strong Drink. Nor should you stove yourself up in a warm Room, but breathe as much as possible in the open Air. And to prevent this Mischief, don't make yourself tender, but wash every Day in cold Water, and very often your Feet.

W H O O P I N G C O U G H.

The *Whooping Cough* (often fatal to Children) is attended with a stronger Convulsion than ordinary, which causes the *Whooping*.

For this, boil *Hysop* and *Elicampane*, a Handful of each, in 2 Quarts of Water, strain it off, and adding 1 Pound of clean *Muscovado Sugar*, boil it again, and give the Patient 2 Spoonfuls every 3 Hours.

This same Remedy is good for a Shortness of Breath, and a Hoarseness, only in these Cases, *Linseed Tea* sweeten'd with *Honey*, should be the constant Drink, and a spare and cooling *Diet* punctually observed.

P L E U R I S Y.

A common Consequence of a violent Cough is a *Pleurisy*; which discovers itself by a brisk Fever, and sharp Pain, pretty low in one of the Sides, shooting now and then into the Breast, and sometimes quite back into the Shoulder Blades: It is uneasy every Time the Patient draws his Breath, and more so when he coughs; which is generally the Case in this Disease.

The Moment any Person finds these Tokens upon him, he must without Loss of Time, take away 10 Ounces of *Blood*, and repeat the same 3 or 4 Days succeffively, if the Pain go not away before. On the third Day, he may vomit with 80 Grains of *Indian Physick (Virginian Ipecacuanna)* and every Night drink 7 Spoonfuls of *Pennyroyal Water,*

Water, or the Decoction of it, moderately sweeten'd. In the mean Time, let him every three Hours, take Half a Spoonful of *Honey* and *Linseed Oyl* mix'd together. He should also strew *Indian Pepper* upon *Pennyroyal Plaister*, and apply it very hot to the Place where the Pain lies, and be sure to keep himself warm, and abstain from cold Water: Tho' if the Distemper should prove obstinate, you must apply a *Blister* to his Neck, and one to each Arm, on the fleshy Part above the Elbow.

The Patient's *Diet* should be light and cooling; and his constant Drink, either *Linseed* or *Balm Tea*, a little sweeten'd.

The best Way to prevent this Distemper, will be, to *bleed* in the Beginning of any great Hoarseness, or Cough, and also to forbear swilling great Quantities of Water, or Small Beer, in ordinary Life.

FEVER Pain in the Head, Eye, or Ear.

Something a-kin to this, is a *Fever* accompanied with a violent Pain in the Head, Neck, or Shoulder, or with an Inflammation in the Eye or Ear. In all these Cases, you must without Loss of Time, *bleed* 10 Ounces. The next Day *purge* with the *Decoction of Mallows*, and three Spoonfuls of *Syrup of Peach Blossoms*. If the Pain should continue, you must bleed again the third Day, and the Morrow following repeat the *Purge:* And if the Pain be still obstinate, you must renew both *Bleeding* and *Purging* a third Time. In the very Beginning, apply the following *Poultis* to the Part where the Pain lies: Boil the Leaves of *Sage, Wormwood,* and *Rue* together, and having beat them soft, grate Nutmeg thick upon them, and bind them on warm, renewing the same Night and Morning: And in case the Disease hold out against all this, your last Refuge must be a *Blister*, near the Place where the Pain lies.

Your *Diet* should be moist and cooling, such as *thin Hominy, Chicken-Broth,* or *Water-Gruel*; and your Drink, *Linseed* or *Ground-Ivy Tea*, moderately sweeten'd.

This Disease will be also best prevented by *Bleeding* in any violent Cold.

But when there happens a violent Pain in the Breast, with cold Flesh, and a low, quick and uneven Pulse, and an excessive Weakness from the very Beginning of the Distemper, you must forbear *Bleeding* by all Means, till you have warm'd the *Flesh*, and rais'd the *Fever*. In order

to

to which, give him a Decoction of *Snakeroot* and *Pennyroyal*, and endeavour to raise a Sweat between 2 Blankets, if possible. And because the Case is very dangerous, apply a *Blister* to the Breast where the Pain is, in the very Beginning.

Let his *Diet* be *thin Hominy* enrich'd with grated *Nutmeg*, and taken often to recruit the Spirits.

QUINSEY.

Another Distemper consequent to a Cold is a *Quinsey*, known by a Fever, with an Inflammation of the Glands about the Throat, and of the *Uvula*, to that Degree as to render all Swallowing difficult, and painful. For this, *bleed* immediately 10 Ounces, rather in the jugular Vein, than in the Arm; and for Safety apply a *Blister* to the Neck. If the Inflammation should continue, *bleed* again next Day. The Morning after take a *Purge* of the *Decoction* of *Mallows*, with *Syrup* of *Peach Blossoms*, repeating the same three several Times, resting one Day between. From the Beginning, *gargle* with Dr. *Papa's* Liquor hereafter described; and if the *Uvula* be much relax'd, drink Half a Pint of the same, Night and Morning when you don't purge.

SORE-THROAT.

But in case it prove no more than a common *Sore-Throat*, *purge* only once, and *gargle* with *Papa's* Liquor, or Sage Tea, sharpened with a little Allom.

In both Cases, your *Diet* ought to be moist and cooling; and your Drink *Cinquefoil Tea*.

In order to prevent these Complaints, remember to wash your Neck, and behind your Ears, every Morning, in cold Water; nor muffle up yourself too warm, either Night or Day.

CONSUMPTION.

Next follows a *Consumption*, a Distemper slow and sure, that is lately grown very common amongst us. Here young People are more in Danger than their Elders, because more liable to Inflammations. It is ushered in by a Cough of long Continuance, which, by Degrees, inflames and ulcerates the Lungs, brings on a Hectick Fever, with a Spitting of bloody and corrupted Matter, and is generally attended with a Hoarseness, and night Sweats. In the mean Time, the Patient will waste in Strength and in Flesh, while perhaps he may eat rather more than he used to do when he was well.

After

After the Ulcer comes to be formed in the Lungs, it will be difficult for inward Remedies to reach it. They may before that, perhaps, cool the Inflammation, as well as sweeten and diminsh the sharp Defluxion, so as to prevent an Ulcer, but can rarely heal it. So likewise, *Blisters* and *Issues* may revulse the Humor, and prevent the Mischief, if seasonably made use of.

Therefore all the Good we can hope for, in this melancholly Case, must be done while the Consumption is apprehended only, and not actually begun. I would then recommend *Bleeding* 2 or 3 Ounces every third Day, with a constant Riding about on Horseback, and Change of Air. This will help Nature to throw off the Evil that threatens her, by calming the Blood, opening the Pores, and promoting insensible Perspiration. It may also enable her to make a vigorous Effort, by Means of a seasonable Boil, or Imposthume, on the outward Parts of the Body. For that Intention, I would also advise the Patient to *shave* under the Arms, and apply strong *Poultises,* in order to draw the Mischief, if possible, that Way. And for inward Medicines, let him only chew *Sassafras Root* every Morning fasting. I would likewise intreat him, before he goes to bed, to take 3 *Pills,* made of *Turpentine* and *Deers Dung,* in equal Quantities: And, besides these, let him once a Week take a *Purge* of *Mallows,* and *Syrup* of *Peach Blossoms.*

Let his *Diet* be without Meat, and mix'd with Abundance of *Turnips, roasted Apples, Raisins* and *Liquorice;* and let his Drink be Beer brew'd with *Ground-Ivy;* avoiding strong Liquors of every Sort, as he would Poison.

The Way to prevent this wasting Disease, is never to suffer a Cough to dwell upon you; but *bleed* in Time, and *purge* gently once a Week. In the mean while eat not one Morsel of Meat, nor drink any Thing stronger than a little sound *Cyder:* And, to make the Game sure, ride every fair Day, and breathe as much as possible in the open Air.

BLOODY-FLUX.

Another mischievous Distemper is the *Bloody-Flux;* the Signs of which are, a small Fever, and grievous Griping. The Patient will also void slimy Excrements streak'd with Blood; and, at the same Time, be cruelly tormented in his Bowels.

Upon

Upon the first Appearance of these Symptoms, part with 8 Ounces of *Blood*. The next Day take 80 Grains of *Indian Physick*, by Way of *Vomit*, and work it well with 2 Quarts of warm Water. The third Day, take 70 Grains of the same *Indian Physick*, in hot Broth, made pretty salt; and then 'twil go off by Way of Stool, and strengthen the Bowels.

In the mean Time let the Food he takes by either *poach'd Eggs*, *Mutton* or *Chicken-Broth*, and his constant Drink, a *Decoction* of *calcin'd Deers Horn*, with a *Plaintain Leaf* boil'd in it.

To prevent this Disease, avoid sleeping on the cold Ground, and wading in cold Water. Never eat immoderately of any Sort of Fruit, nor venture to drink new or foul Cyder by any Means.

And because some People, by fancying this Distemper catching, are fearful of going near those unhappy Persons that have it, by which they often want the Assistance that is necessary; I may venture to assure them, their Apprehensions are groundless; and the Reason this Disease goes sometimes round a Family, is, because they live on the same *Diet*, and breathe in the same Air; and then no wonder if they fall into the same Disorders, one after another, without any Manner of Infection.

W H I T E - F L U X.

There is also a Kind of *White-Flux*, that will hurry a strong Man out of his Life in a short Time. In this Case the Stools are frequent, without Gripes or Blood, but flowing from the Patient like Water, and having a small Fever attending it.

Lose no Time in this hasty Disease, but *vomit* with *Indian Physick*, and *purge* the next Day with the same. In the mean while, you will do well to wear some Skin girt tight on your Stomach and Belly, with the Fur next you, or else a Piece of soft Flannel.

Let your Food be *Hasty-Pudding*, *Panada*, or *Broth thickened with Flour*, grating *Nutmeg* into every Thing you eat; and let your Drink be a *Decoction* of *Deers Horn*, made with a Leaf of *Plantain*.

In order to prevent this Disorder, avoid walking and riding in the Night Air, guzzling huge Draughts of cold Water, and devouring unreasonable Quantities of Fruit, especially of that which is not ripe.

L O O S E-

L O O S E N E S S.

A *Common Looſeneſs* needs no Deſcription; and may be eaſily ſtopped in the Beginning; tho' ſome People huſband it ſo well, as to keep it running for many Years: So that all the Humours of the Body taking that Turn, make it difficult to cure.

Therefore to check this Ailment in Time, you muſt *vomit* with *Indian Phyſick*; then live three or four Days upon *new Milk boil'd thick with Flour*, or *Tuckahoe*, and drink the above-mentioned *Deers Horn Decoction*.

Or mix an equal Quantity of *Decoction of Mint Roots* and *Brandy*, with the *Yolks* of two *Eggs*. This Drink warm three Nights together at going to Bed.

Then, to prevent it, eat not intemperately; nor drink windy or foul Liquors, or too much cold Water.

There is an eaſy Remedy for all Sorts of *Fluxes*, uſed by ſome *Doctors* of *Negro* Ships, with great Succeſs. They boil one Ounce of *Bees-Wax* in *Rice*, or *Haſty-Pudding*, ſufficient for one Meal. They continue this a few Days, and ſuffer the Patient to drink very little Water, enliven-ed with about a fourth Part of *Rum*. This Method ſel-dom fails, even in *Bloody-Fluxes*, as well as *Others*, and is the more valuable for being neither dear nor diſagreeable.

G R I P I N G.

But in Caſe of an ordinary *Griping* in the Belly, or *Wind* in the Stomach, drink a Gallon of *warm Whey*, and if that cannot be had, a Gallon of *warm Water*, as faſt as you can ſwallow it; and afterwards *purge* with *Mal-lows*, and *Syrup* of *Peach Bloſſoms*, once or twice.

For a few Days content yourſelf with a moderate and eaſy *Diet*; and let your Drink be *Balm Tea*.

It may be prevented by keeping your Back-door con-ſtantly open, abſtaining from windy Meats, and fermented Drinks, and being always careful not to overload your Stomach.

C H O L I C K.

The *Cholick* is lately grown a very common Diſtemper, and begins generally with a grievous Pain in the Bowels; and, by being neglected, fixes at length in the Pit of the Stomach, where it ſeems to bore like an Augre: The Pa-tient frequently vomits every Thing he ſwallows, and can hardly go to Stool, even with the Help of purging Me-dicines.

People

People thus afflicted are apt to fly to Drams for Relief; but with lamentable Succeſs. Theſe may eaſe a Fit ſometimes; but are ſure to add Fuel to Fire, and make the Diſeaſe return with more Violence. Beſides, theſe Cordials have another bad Conſequence; they are apt to make People ſoberly enough inclin'd, by Degrees, grow too fond of their Phyſick. To cure all which bad Effects at once, I would recommend this certain and eaſy Remedy: Let him leave off all ſtrong, windy and fermented Liquors, and drink nothing but *Water*, enriched with a brown Toaſt.

But if this Remedy ſhould be eſteemed worſe than the Diſeaſe, I would, however, for the eaſing a particular Fit, recommend two or three Quarts of *warm Water*. And to force a Paſſage, you muſt take three or four Spoonfuls of *Bears Oil*, which will ſeldom fail; or elſe drink a Quarter of a Pint of the Decoction of *Peach Leaves*, with two Spoonfuls of Syrup of *Peach Bloſſoms*; and this Purge you ought to repeat two or three Times to carry off all Remains. But if you would root out the Diſtemper for ever, take the ſame Medicines every full Moon; and drink every Morning, for ſome Time, *Saſſafras Tea*; and, at Night, take as much *Snakeroot Powder* as will lie upon a Six-pence, in *Mint-water*, or *Decoction*.

The Food proper in this Diſtemper, is *Chicken* or *Mutton Broth*; and the Drink *Balm Tea*, ſweeten'd with *Syrup of Mallows*.

And to prevent it, eat ſparingly, forbearing every Thing that is ſalt and windy; and never drink Spirits, one Drop of *Green Tea*, or brew'd Liquor of any Kind.

D R Y - G R I P E S.

The *Dry-gripes* are now (bleſſed be God) grown much rarer than formerly. This is the cruelleſt Kind of *Cholick*, called in *Europe*, the *Cholick of Poitiers*; though here it might be called the *Caribbee Cholick*, becauſe very common in thoſe Iſlands; and I wiſh we may not have deriv'd it from thence, by too liberal an Uſe of their Commodities.

It makes itſelf known by a moſt tormenting Pain in the Pit of the Stomack, and the adjacent Parts. The Guts feel as if they were twiſted, and all Motion downward is interrupted; by this Misfortune, the unhappy Patient is inclined to vomit up every Thing; inſomuch, that ſometimes his very Excrements are caſt out at his Mouth. In the firſt Place, a Thoroughfare muſt by all Means be attempted,

tempted, by 3 Spoonfuls of *Bears Oil*, or by the *Decoction* of *Peach Leaves*, above mentioned. If these Remedies should fail, you must submit to a *Tobacco Glister*, perform- ed by blowing the Smoak through a Pipe into the Funda- ment. And if the first Operation should happen to fail, it must be repeated, till a Passage be opened. At the same Time, make a strong Infusion of *Tobacco*, and therewith anoint the lower Region of the Belly.

After the Passage is perfectly clear'd, your *Diet*, for some Days, ought to be either *Mutton* or *Chicken Broth*, in which *Mallows* have been boil'd ; and your Drink *Balm Tea*.

Some have unadvisedly, in this Distemper, ventur'd also to drink Rum, and other Spirits, to ease their Pain ; but this has cost them dear, by taking away the Use of their Hands, and other *Paralytick* Misfortunes ; to cure which, the same Remedies must be used, as are prescribed hereafter for the *Palsey*.

The best Way to prevent the *Dry Gripes*, is to get rid of *Agues* and *Cholicks* as soon as you can ; to eat sparingly of Fruit, and forbear all foul and windy Liquors ; nor med- dle with Rum, or other Spirits, after it has been poisoned with foul Sugar and Lime-Juice.

H E A R T - B U R N.

The *Heart-burn* is an uneasy Heat at the Mouth of the Stomach, accompanied with four Belchings, and some Times a Hiccup.

This is removed by chewing *Sassafras Bark*, or by a *Decoction* of it.

It is prevented by forbearing Spirits and foul Liquors, and also the Use of high season'd and four Things, which kindle too sharp an Acid in the Stomach.

P A L S E Y.

A *Palsey* comes suddenly upon us, with dreadful Symp- toms, not easy to be mistaken. We are bereft of Sense and Motion, either in one, or more Parts of the Body ; or at least we find them numb'd and disabled ; and where the Disease is extreme, one Side is taken quite motionless, and insensible.

At the first Appearance of these melancholly Tokens, *purge* with *Indian Physick* every other Day, for 3 Times. The Morning you don't *purge*, cause yourself to be plung'd over Head and Ears into cold Water ; and this should be

repeated

repeated thrice every Week, for 3 Months together. You are also to mix equal Quantities of *Spirit of Scurvy-grass*, and *Hungary Water*, and dipping a stiff Cornbrush therein, cause your Head, being close shav'd, to be well brush'd with it several Times a Day; likewise let the Palms of your Hands, the Soles of your Feet, and Nape of your Neck, be often rubbed with the same Mixture. After this has put some Sense and Motion into your Limbs beat *Rosemary* in a Mortar, and make a little Ball of it, which you must roll and work about in your Hands continually, renewing the same every Day; now and then too, put Tobacco up your Nostrils, letting it lie there for some Time, in order to drive the clammy Phlegm from your Brain. These easy Remedies will, by the Grace of God, do great Good in the Beginning of this Disease, by restoring the Nerves to their natural Tone, and giving new Vigour to the Animal Spirits, which have been clogg'd and obstructed. The Patient's Food should be dry, and of easy Digestion, with *Mustard* and *Horse-raddish* mix'd with it; and let *Sage* or *Balm Tea* be his constant drink.

To prevent this Distemper, feed seldom on salt or high season'd Dishes, nor eat much Milk, or other phlegmatick Food; never sleep in the dangerous Dew, or on the moist Ground, or continue long in a Cellar; or other damp Situation. Use much Exercise, and let your Motion be always nimble, in order to quicken the Circulation, and frisk your sluggish Spirits.

E P I L E P S Y.

Another Disease of the Head, is an *Epilepsy*, or *Falling Sickness*, not unusual in this Country. It discovers itself by very terrible Symptoms; the unhappy Person falls down suddenly deprived of all Sense and Understanding. No sooner is he fallen, but she's immediately shaken with strong Convulsions, grinds his Teeth, rolls his Eye-balls, and foams at the Mouth in a most frightful Manner. So soon as the Fit is over his Senses return, but commonly a Pain in the Head, and great Depression of the Spirits remain upon him for some Time after. The Return of these melancholly Fits is uncertain, tho', for the most Part they come near the Full or Change of the Moon. In the first Place care should be taken to calm the Spirits of the Patient and keep them from running Riot in this unhappy Manner. For that Intention *bleed* him, and then burn Feathers often under his Nose, or else Leather, or the Hoofs of any Animal.

Q

Four

Four Days before the full Moon, let him take a Vomit of *Indian Physick*; and four Days after the Full-Moon, let him take a Purge of the same; and be sure to do the same before and after the Change: And this must be repeated for 7 Months together. On the Mornings when he takes no Physick, he must swallow as much *Powder of Misleto*, as will lie upon a Shilling, in a spoonful of the *Decoction of Pennyroyal*.

For this Purpose, the Leaves and tender Twigs of *Misleto* must be gather'd in *January* (being then in their Prime) dry'd over an Oven moderately warm, and kept all the Year for the Use abovementioned. Let the Patient's Head be shaved, and a Plaister made of the Juice of *Rue*, *Sage*, and *Pennyroyal*, worn on the back Part of it. Let him often put *Tobacco* up one of his Nostrils, keeping it there as long as it has any Strength, to clear the Head of cold and clammy Phlegm. And let him now and then, besides, chew a Stick of *Misleto*, and swallow the Juice. These Directions must be pursu'd seven Months, or more, to cure any Person intirely of this Distemper; and, if it be taken in Time, there will be great Probability of Success, at least in young People. Let his Victuals be sparing and easy of Digestion; and his constant Drink, either *Sage* or *Balm Tea*.

As People commonly fall first into this Misfortune while they are Children, so, in order to prevent it, Care should be taken never to fright, or strike them violently on the Head, Back-bone, or Nape of the Neck.

L E T H A R G Y.

A *Lethargy*, commonly called the *Sleepy Disease*, is an excessive Drowsiness, attended with a Fever in which the Patient is light-headed when awake. But he is apt to fall into a deep Sleep, from which it is no easy Matter to awake him.

In this Case mix *Rennet* with very strong *Vinegar*, and force it down the Patient's Throat. This must be repeated 3 or 4 Times, and it will generally recover him from his State of Forgetfulness, and by Degrees get the better of the Distemper, especially if you add a perpetual *Blister* between the Shoulders. A very spare Diet, and living on dry Food as much as possible, will prevent the Return of this Disease.

F E V E R, *with violent Purging and Vomiting.*

A *Fever, with violent Purging and Vomiting*, can't easily be mistaken. The Stools, tho' frequent, are with great Pain and Difficulty; both the Stomach and Bowels feel exceeding uneasy, and the whole Frame is in universal Disorder.

As

As this Difeafe will hurry a Man foon to his long Home, without fpeedy Help, you muft forthwith make 2 Gallons of thin *Broth*, either of Half a Fowl, or a fmall Chicken, and drink it all in the Space of 2 or 3 Hours ; fome of this will come up, and fome go down, and cleanfe your Stomach and Bowels in fuch a Manner, as to make you well before you expect it.

Only be careful to live fome Days upon light and innocent Fare, boiling *Mint* in every Thing you eat, and grating *Nutmeg* into all your Drink.

Would you prevent this boifterous Illnefs, forbear all Kind of Surfeiting and Excefs, never expofing yourfelf to be wet to the Skin, if poffible.

I muft not omit a *Fever and Ague*, which is an Epidemic Diftemper in this moift and variable Climate. 'Tis true, it feldom kills now a-Days ; but if neglected too long, corrupts all the Juices of the Body, and ends either in a *Jaundice, Dropfy, Dry-gripes,* or *Cachexy.* Therefore I conjure all my good Patients, as they tender their Health and good Looks, to difpoffefs this *Devil* as foon as they can.

A G U E.

An *Ague* returns either every Day, every third, or every fourth Day ; and the Way to know which of thefe any Perfon hath, is only to abide two Fits. If it come every Day, it will be often accompanied with a Pain in the Head ; in which Cafe, after the fecond Fit, you muft *bleed* 8 Ounces. The next Day *purge* with *Indian Phyfick,* and two Days after, that, repeat the fame again. This muft be followed, by taking every Morning and Evening 20 Grains of the Powder of *Saffafras Root,* mix'd with 10 Grains of *Snake Root,* in two Spoofuls of the *Decoction* of *Wormwood.*

If the Fit returns every third Day, omit *Bleeding,* in cafe there be no Pain. After the fecond Fit, *vomit* one Day with *Indian Phyfick,* and *purge* with the fame the next. If thefe fhould not mafter the Diftemper, you muft compleat the Cure with the *Powder* of *Saffafras* and *Snake-root,* taken as aforefaid.

But in Cafe the Return fhould be every fourth Day, you muft after the *Vomit* and *Purge,* take a *Cold Water Sweat.* That is, fo foon as the cold Fit is off, and the Fever begins to come on, go into naked Bed, and drink a Pint of *cold Water* ; then cover yourfelf up, and, in a little Time, the Difeafe will be driven all out at your Pores. However, take the *Powders* after this Operation for fome Time, that you may make fure Work of it.   Q 2   Your

Your *Diet* should be moist and temperate, and drink *Cinquefoil Tea*.

It would be difficult to prescribe Rules to prevent a Distemper, to which our Situation is so unhappily subject; however, Prudence may be useful even in this Case. Ride therefore a great deal in the hot Months, to sweat out all indigested Humours; and don't chill your Bowels too much with cold Water. Avoid, as much as may be, being abroad in the Rain, or in the Dews of the Night. Be cautious too of sleeping on the Ground, or with your Windows or Doors open, to let the Wind blow upon you.

CONTINUAL FEVERS.

In case of a *Continual Fever*, *bleed* immediately 10 Ounces. The Day following, *vomit* with *Indian Physick*; and the Morning after, *purge* with the same. And if you should be light-headed, be convuls'd, or incline too much to Sleep lay a large *Blister* to the Neck, and to the fleshy Parts of each Arm; and take a *Glister* every Night of *Mallows* and *Syrup* of *Peach Blossoms*, to abate the Heat of the Distemper.

It matters not how little People eat in one of these Fevers, because the Spirits requisite for Digestion, are employ'd in struggling with the Disease; But what little Sustenance they do take, should be moist and cooling; and their Drink a *Decoction* of *Cinquefoil*, taken plentifully.

To prevent this furious Malady, avoid all Excesses of strong Drink, especially of Spirits, which inflame the Blood, at the same Time that they vitiate the Ferment of the Stomach; upon which all Digestion, and consequently all Health, depends.

SLOW FEVER.

But there is a *Slow Fever*, more difficult to manage than all the rest, which is the true *Scorbutic Fever*. The Signs of it are a low, but quick Pulse, a constant Thirst, a Falling away of the Flesh, and a sallow Complexion. There will be sometimes too, a hard Swelling on one Side of the Belly, that seems to move about.

As this lurking Disorder comes by a long Course of ill Management, so it will need some Time to root it out. For that End, take a *Vomit* of *Indian Physick*, and the next Morning a *Purge* of the same; which *Purge* ought to be repeated once a Week for six Times at least. The Mornings you don't take *Physick*, drink constantly a Quarter of a Pint of *Sassafras Tea* fasting; and every Night, as much

Powder of *Snake-root* as will lie upon a Shilling, in three Spoonfuls of *Decoction* of *Dittany.* And if you should be costive, take a *Glister* every other Day of *Decoction* of *Mallows,* with *Syrup* of *Peach Blossoms.* This Method faithfully pursued for two Months, with moderate Riding, and a proper Diet, will go near to finish the Cure.

In the mean Time eat no Milk, nor any Thing salt or hard of Digestion; but let your Sauce be *Mustard, Garden Cresses,* and *Horse-raddish* in Abundance; your best Drink will be found *Cyder,* with a hot Iron quenched in it or Beer brew'd with *Sorrel Tree Leaves.*

Then, to prevent this Illness, you must indulge no sluggish Inclination, but stir about your Business briskly, and ride as often as you can; never drink more than a Pint of Water, or other Drink, in 24 Hours. Breathe as much as possible in the open Air in the Day Time, and avoid it in the Night.

WORM FEVER.

There is besides, another Kind of *Fever* hard to be distinguished, especially among Children, and that is a *Worm Fever.* There will be a quick Pulse, and often a Pain in the Side, in the Stomach, or Bowels, and all occasioned by Worms. Now and then too, there will be the Symptoms of the *Flux,* and even Convulsions; so that like the Devil it appears in all Manner of Shapes. The only Way I know of discerning it, is by a swell'd Body, a tainted Breath, or a greedy Appetite, beyond what is usual in other feverish Disorders.

Give a *Vomit* of *Indian Physick* one Day, and a *Purge* of the same the next. Beat the *Seed* of *Jerusalem Oak,* and take a Spoonful of it, mix'd with the *Juice* of *Rue* or *Wormwood,* for three Mornings. From the Beginning, soak a cur'd *Leaf* of *Tobacco* in Vinegar, and apply it warm to the Stomach or Belly; and it will make the Worms much sicker than it doth the Patient. Let his Food be season'd with a great deal of Salt; and his Drink, Beer brewed pretty bitter, with *Wormwood* instead of *Hops.*

It is difficult to hinder Worms from hatching and harbouring in our Bodies, because we swallow their eggs almost with every Thing we eat; especially such as live much upon *Pulse* and *Indian Corn* will be full of them. So that I may venture to say, three Fourths of the Children that die in these Parts of the World, die of *Worms.*

The best Way to prevent them, is to make Use of a great deal of *Pepper* and *Salt* with your daily Food, and as

Q 3
little

little *Vinegar* as possible, which is full of small Insects, to be seen by Millions with a Glass.

C A C H E X Y.

I took Notice that a *Cachexy* was one of the Consequences of letting a *Fever* and Ague continue too long; tho' the same is produced likewise by an unwholsome Diet, by a slothful Habit, and drinking Abundance of cold Water. The Signs of it are a slow Fever of the *Hectick* Kind, a continual Thirst, a Shortness of Breath, and a very cadaverous Complexion.

For the Cure of this lazy Distemper, you must proceed in the same Method as is directed in the Case of *slow Fevers*; only I would advise the Patient, over and above, to take every Day, at 10 in the Morning, and 4 in the Afternoon, a Dram of *Rum*, wherein the *Flowers* and Tops of *Centory* have been infus'd, and during the whole Course of the Cure, the Patient must, by all Means, shake off his lazy Disposition, rise early in a Morning, and stir about as briskly as his strength and Breath will permit. His Food should be fresh, and easy of Digestion; and his Drink Beer brew'd with *Wormwood*, and the *Leaves* of the *Sorrel Tree*.

To prevent falling into it, never suffer *Agues* or *slow Fevers* to taint your Blood; be nimble in your Motion and drench not yourself with cold Water between Meals.

Y E L L O W   J A U N D I C E.

Another bad Effect of keeping an *Ague* too long, is the *Yellow Jaundice*. This discovers itself by the yellow Hue of the Face and other Parts of the Body; nay the Whites of the Eyes and Urine will be also ting'd with it.

For this Illness take a *Purge* of *Indian Physick*, and repeat it the third Day again. After that drink every Morning and Evening, for six Weeks, a Quarter of a Pint of *Decoction* of the *inner Bark* of *Elder*, and the *Root* of *Saffefras*, in equal Quantities. In the mean Time, force your self to stir about, and ride on Horseback every fair Day.

Let all your Victuals be light and temperate; and your Drink Beer brew'd with *Sorrel Leaves*, *Pine Tops*, *Root* of *Ash*, and a little *old Iron*.

To ward off this ungracious Disease, cure your *Agues* in the Beginning, lingering *Fevers*, as soon as possible, and use Agility in your Motion.

D R O P S Y.

But the most fatal Consequence of keeping an *Ague* or

Jaundice too long, is a *Dropsy*. This dire Calamity befals antient People sometimes, by Means of natural Decay; and sometimes those that are young, when they have made too bold with their Constitution. 'Tis also apt to follow too great a Loss of Blood, or too long a Familiarity with *Opiates*.

A *Dropsy* first shews itself by the Swelling of the Legs about the Ancles, in such a Manner as to retain the Impression of your Finger. This Swelling appears most at Night, and is usually attended with a Shortness and Difficulty of Breath, ever most troublesome when the Patient lies down.

He must therefore resolve upon proper Remedies, before the Waters rise high enough to drown him; and if he have but the Gift of Self-denial, he may by God's Help get the better of this mortal Enemy; provided there be no universal Decay, no Depravation of the Liver, or other Organs, necessary for Blood-making.

Now I can't recommend the Remedies for this Disease better, than by giving three remarkable Instances of Persons of an advanced Age, who have been perfectly cur'd by them.

The first was Sir *Thomas Millington*, an eminent Physician, who fell into a *Dropsy* at near 70 Years of Age. After draining the Water, by 2 or 3 smart *Purges* he performed the rest of the Cure by a resolute Self-denial. He eat nothing but what was light and nourishing; and for his Drink, confined himself rigorously to a Quarter of a Pint of *Rhenish* Wine in 24 Hours (and hard *Cyder* would have done the Business as well.) The first Week his Thirst was hardly to be endured; but after that grew more tolerable. He continued this Course for two Months, and recovered compleatly.

The second was the late Earl of *Orford*, who had this Distemper in his *grand Climacteric*. He purg'd 2 or 3 Times, drank sparingly of *Canary* and *Water*, thicken'd with the Yolk of a *new-laid Egg*; and all his Victuals besides were cook'd with Abundance of *Garlick* and *Horse-raddish*. This Method was pursued with great Constancy for three Months, and blest with entire Success.

The last Instance is an *ancient Gentleman* who trusted to the Remedies of our own Country, with the like happy Effect. He drank the Decoction of *Sassafras* as soon as he got up, and chew'd the *Root* of it all the rest of the Morning till Dinner; then observed a light and nourishing *Diet*; and drank moderately of clear sound *Cyder*, wherein an *hot Iron* had been plentifully quench'd, and a little *Allom* dissolv'd.

Of thefe feveral Remedies you may pleafe to take your Choice; or, inftead of *Saffafras*, you may hold the *Seeds* of *Pelitary of Spain* in your Mouth, which will falivate ftill more powerfully.

The Reft of the Cure muft be compleated with reftorative Meats, and a very fhort Allowance of Drink. For your *Diet* I would recommend *poach'd Eggs, thin Hominy, Hogs Feet, Cow Heel,* and *Jelly Broth;* all which will renew and enrich the Blood, without provoking too much Thirft: and for Drink ufe none but *Sorrel Beer,* or found *Cyder,* wherein *hot Iron* has been quench'd feveral Times.

To guard yourfelf againft this wretched Diftemper, be cautious of fcorching your Liver with Spirits, or Excefs of other ftrong Drink. In Cafe you be troubled with *Bleeding,* ftop it as foon as you can. By no Means accuftom yourfelf to *Opiates,* or fuffer an *Ague,* the *Jaundice,* or lingering *Fevers,* to dwell long upon you.

Becaufe I mentioned Lofs of Blood to be one Caufe of the *Dropfy,* I will hint at fome Means to ftanch thefe *Bleedings* that threaten the moft Danger.

BLEEDING PILES.

In Men the exceffive *Flux of the Bleeding Piles* fometimes ends in a *Dropfy,* if not ftopp'd in Time, in that Cafe *purge* with *Indian Phyfick* two or three Times; and the Mornings you don't take that drink the *Expreft Liquor* of *frefh Afs Dung,* fweetened with *Syrup* of *Quinces,* to be repeated three Times. In the mean while, take an Ounce of *Conferve* of *Rofes,* twice or thrice a Day; and after every Stool, wafh your Fundament clean with *Decoction* of *Comfry Leaves* made very warm. Live all the Time upon a cooling Diet, without Meat; and only drink *Burnet* or *Yarrow Tea,* fweeten'd with *Syrup* of *Quinces.*

Thofe that are liable to this, or the like Infirmities, fhould avoid heating themfelves with ftrong Drink, or too boifterous Motion; nor muft they fall into violent Paffions, either of Love or Anger.

FLOODING.

In Women a *Dropfy* is often caus'd by *Flooding, or the immoderate Flowing of their Courfes.* Let them for this, In the firft Place, take away eight Ounces of *Blood,* and then proceed as in the foregoing Cafe; only they muft inject the *Decoction* of *Comfry Leaves,* and govern their Paffions if they can; nor muft any Part of them, not fo much as their Tongue, be allowed to have too much Motion.   This

This Infirmity comes upon the Sex about 50 Years of Age; and after *bleeding* and *vomiting*, nothing cures it better than the Use of the *Cold Bath.*

BLEEDING at the NOSE.

The *Bleeding at the Nose* must be treated just in the same Manner, except the *Decoction* of *Comfry Leaves* should be often snuffed up the Nose; and a Tent soak'd in the same frequently thrust into the Nostril; and if a little *Allom* were dissolv'd in the *Decoction*, it would be so much the better.

SPITTING or PISSING of BLOOD.

Then for *Spitting* or *Pissing* of *Blood*, bleed 8 Ounces. The next Morning *purge* with *Indian Physick*; and drink nothing but *Tea* made of *Comfry Leaves* or *Root*, and sweeten'd with *Syrup* of *Quinces*. But whenever a *Fever* produces Loss of Blood, the Heat of that must be taken off by *cooling Medicines*, before the *Bleeding* will cease.

WHITES.

In the *Whites* too I would recommend *Bleeding* in the Beginning, and *Purging* two or three Times with *Indian Physick*. When she don't *purge*, let her Night and Morning drink Half a Pint of *Papa's* Liquor, with an Ounce of *Conserve* of *Roses* dissolv'd in it; and often inject the same. For the rest, she must use the same *Diet*, the same *Drink*, the same moderate Motion, and Freedom from Passion, as are mentioned before.

GLEET.

A *Gleet* or *Running of the Reins*, in Men, must be treated in all Respects as the foregoing Weakness in the other Sex; provided always it be not *Veneral.*

DIABETES.

A *Diabetes* discovers itself plainly, by making Water abundantly, which commonly has a greasy Skim upon it, 'Tis also attended with a low sneaking *Fever*, and much stronger Inclination to drink than eat. At the same Time the Patient finds himself weak and low spirited, with a Listlessness to all Manner of Motion.

For this bad Distemper there is this easy and cheap Remedy, which rarely fails. Dissolve as much *Allom* in a Pint of Posset Drink as will sit on the Patient's stomach without vomiting. Of this let him sip now and then two or three Spoonfuls, till all the *Symptoms* go off.

In the mean Time, let his Food be easy of Digestion, and.

and his Drink *Balm Tea*, moderately taken, or *Bristol Water*, if it can be got.

And the Way to avoid this *Disease* is, by a temperate Use of such *Meat* and *Drink* as breed good Blood.

V A P O U R S.

There is no Disease puzzles *Physicians* more than the *Vapours*, and *Hysterick Fits*. These Complaints are produced by so many Causes, and appear in so many various Shapes, that 'tis no easy Matter to describe them. However, some of the *Symptoms* are a Thumping at the Heart, a Croaking of the Guts and a Fulness of the Stomach, which the Patient endeavours to ease, as much as she can, by Belching; every now and then too, something seems to rise up to her Throat, that almost stops her Breath; she has moreover, a great Heaviness and Dejection of Spirit, and a Cloud seems to hang upon all her Senses. In one Word, she has no Relish for any Thing, but is continually out of Humour, she knows not why, and out of Order, she knows not where.

This is certainly a miserable Condition and the more so, because the weakness of the Nerves makes the Cure exceeding difficult. Because the Stomach is suspected to be much in Fault, I would have that cleansed in the first Place, with a *Vomit* of *Indian Physic*; the next Day purify the Bowels by a *Purge* of the same; which must be repeated two Days after. The rest of the Cure must be performed by the exact Observation of the following *Rules*. Endeavour to preserve a cheerful Spirit, putting the best Construction on every Body's Words and Behaviour; plunge three Mornings every Week into cold Water over Head and Ears; which will brace the Nerves, and rouse the sluggish Spirits surprizingly. Observe a strict Regularity and Temperance in your *Diet*; and ride every fair Day small Journeys on Horse-back. Stir nimbly about your Affairs, quick Motion being as necessary for Health of Body, as for Dispatch of Business. In the mean while, I absolutely forbid all Sort of *Drams*, which will raise the Spirits only to sink them lower; nor do I allow her one Pinch of *Snuff*, or one Drop of *Bohea Tea*, which make People lumpish and miserable. Her *Food* must be fresh and easy of Digestion, neither salt nor windy, nor may she eat one Morsel of *Beef*, which affords a gross Nourishment, and inclines People too much to hang themselves. And for her Drink, she must forbear *Beer*, with all windy and fermented Liquors; and stick to *Balm Tea* entirely.—To escape this Disorder, she must suffer none of

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the idle Difturbances, or Difappointments of an empty
World to prey upon her Mind, or ruffle her fweet Temper.
Let her ufe juft Exercife enough to give a gentle Spring to
her Spirits, without wafting them ; and let her be cheerful
in fpite of a churlifh Hufband, or cloudy Weather.

SUPPRESSION of the COURSES.

Now I am upon *Female Infirmities*, it will not be unfeafon-
able to touch upon a common Complaint among unmarried
Women, namely, *The Suppreffion of the Courfes*. This don't
only difparage their Complexions, but fills them befides with
fundry Diforders. For this Misfortune, you muft *purge* with
Highland Flag (commonly called *Belly-ach Root*) a Week be-
fore you expect to be out of Order ; and repeat the fame
two Days after ; the next Morning drink a Quarter of a
Pint of *Pennyroyal Water*, or *Decoction*, and as much again
at Night when you go to Bed. Continue this 9 Days run-
ning ; and after refting 3 Days, go on with it for 9 more.
Ride out every fair Day, ftir nimbly about your Affairs,
and breath as much as poffible in the open Air.

You muft feed upon a warm and cordial *Diet*, enrich'd
with a great deal of *Muftard*, *Nutmeg*, *Horfe raddifh* and *Gar-
den Creffes* ; at the fame Time avoiding every Thing that is
aftringent, phlegmatic and windy. And let your *Drink* be
Beer, brew'd with *Sorrel Leaves*, or elfe *Ground-ivy Tea*.

To prevent this Complaint, young Women muft fhake off
Sloth, and make ufe of their Legs as well as their Hands.
They fhould be cautious of taking *Opiates* too often, or *Je-
fuits Bark*, except in Cafes of great Neceffity ; nor muft they
long for *pretty Fellows* ; or any other *Trafh* whatfoever.

STONE in the BLADDER.

Heaven be prais'd there is little Occafion to fay any Thing
of the *Stone in the Bladder*, there being few Inftances of it in
this Colony. Among the Gentry, the *Madeira Wine* which
has but little *Tartar* in it, and the *Molaffes Beer*, being foft
and cleafing, are happy Defences againft this Scourge of
Luxury and Lazinefs : And then for the common Planters,
their *Pone*, and other Preparations of *Indian Corn*, being
fmooth and flippery, are likewife excellent Prefervatives.

GRAVEL.

Neverthelefs, fome few of us, by fitting too long either
at our Book or our Bottle, have now and then, fome
Touches of the *Gravel, or Stone in the Kidneys*. This makes
itfelf known by a Pain acrofs the Loins, by Urine ting'd
with

with Blood and mix'd with Sand, and jagged little Stones; the Stomach too is sometimes affected, and inclined to vomit.

When you find these concurring Symptoms, drink 3 or 4 Quarts of *Whey* as fast as you can, wherein the *Root* of *prickly Pear* has been boil'd. When that has all past, squeeze the *Juice* of *Wild Garlic* into clean sound *Cyder*, and drink a moderate Glass of it Night and Morning for 6 or 7 Days.

In the mean time, let your Food be *thin Hominy*, or *Broth* with a few *Mallows* boil'd in it; and your Drink, a *Decoction* of *Mallows*, sweetned with *Syrup* of *Violets*.

And the Way to ward off this painful Disease, is to be temperate in all your Enjoyments, to eat a great Deal of *Milk*, and Meats made of *Indian Corn*; but above all Things be cautious of sitting still too much.

SUPPRESSION of URINE.

A common Consequence of the *Gravel* is a *Suppression* of *Urine*, occasioned, sometimes, by small Stones lodging in the narrow Passages, that lead from the Kidneys to the Bladder. The Signs of this Complaint are too plain to any One who has his Feeling; and to cure it, you must proceed in much the same Method as for the *Gravel*; only you should add *Parsley Tea* to your Drink, sweeten'd with *Syrup* of *Violets*.

But if the Suppression arise from an Ulcer, or Inflammation in the Neck of the Bladder, then the *Symptoms* are a great Heat and Pain in that Part, with an urgent Need to make Water, but a Disability to do it at all, or, at most, not faster than Drop by Drop. For this, boil one Part of *Oil* with two Parts of good *Cyder*, and thereof swallow a Spoonful or two Night and Morning. Let your *Diet* all the while be cooling and easy of Digestion; and your Drink, *Parsley Tea* or *Cyder*, with a *Plantain Leaf* boil'd in it.

To prevent this Ailment, eat seldom of pepper'd or high season'd Meats; and drink moderately of hot Liquors: Tho', above all Things, you must forbear using artificial Provocatives to recommend you to the delightful Sex; but for that, let Nature be your only Prompter.

BLIND PILES.

The *Symptoms* of the *Blind Piles*, are little painful Swellings, appearing just without the Fundament. They are occasioned by the Flowing of corrupted Blood into the Vessels thereabouts, which sometimes creates so much Anguish, as to put the Patient into a *Fever*, and render every Posture uneasy.

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For this Complaint, take every Morning fafting, in the Yolk of *a new laid Egg*, 12 Grains of *Brimftone*, finely powder'd ; and wafh it down with a fmall Draught of *Decoction* of *Mallows*. And to affwage the Pain, make Ufe of this *outward Application :* Stamp a *roafted Onion*, with a little *Ointment* of *James-Town Weed*; which muft be laid on warm, and renewed twice a Day.

In the mean Time the afflicted Perfon's *Diet* ought to be moderate and cooling, without Meat of any Kind ; and his conftant Drink, *Milk* and *Water*.

But, in order to prevent this Affliction, and root it out for ever, ufe the following Remedy. Boil a Handful of *Mullein Leaves* in a Pint of *new Milk*, and fweeten it with *Syrup* of *Violets*. Drink this every Night for 6 Weeks together, juft before you go to reft.

RUPTURE.

A *Rupture* is a common Misfortune, efpecially among *Children*. The Tokens of it are a painful Swelling and Inflammation in the Cods, occafioned by a Fall, or other Violence, that forces down the Guts into that Part, and is moft painful when the Accident firft happens.

For this, let the Patient immediately have a *Trufs* made that may hold the Part fufpended. Then apply frefh *Cow Dung*, which muft be renewed Night and Morning, till the Pains are affwaged. After that, put on another *Poultis*, made of the *Roots* of *Swamp Lillies*, and *Sumack Berries*, boil'd and beat well together ; which muft alfo be refrefhed twice a Day, till the Swelling difappears. From the Beginning, let him gird a Belt tight about his Loins, and wear it continually, till the Bowels are drawn up to their natural Situation.

Let his *Diet* be cooling, and eafy of Degeftion ; and his conftant Drink, a *Decoction* of *Garden Creffes*, fweeten'd with *Syrup* of *Quinces*.

In order to prevent this Difafter, care muft be taken never to over-ftrain yourfelf, ufe too violent Motion, or fall in fuch a Manner as to injure yourfelf in thofe fenfible and tender Parts.

KING's EVIL.

The *King's Evil* proceeds from a foul and obftinate Humour in the Body that breaks out into Swellings and Sores, and is often derived from our Parents.

For this great Misfortune take a clean Spunge, and dry
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it well in an Earthen Pot, and having reduced it to a fine Powder, take as much as will lie upon a Shilling Morning and Evening, in warm *Asses Milk*. This must be continued for 3 Months to compleat the Cure, in the mean Time, Care should be taken never to scorch the Spunge. While this Remedy is taken inwardly, apply the Poultis of Saffafras to the Sores that are broke, which will both draw and heal them.

A spare *Diet* should be used all the while, without Salt Meat, or strong Drink.

The best Way to prevent this impure Distemper, is for those that have it, never to marry, nor do worse, that they may not transmit their Misfortune to Posterity.

Y A W S.

The *Yaws*, or *Country Distemper*, is very bad to cure perfectly, especially when grown inveterate. This is the highest Kind of *Scurvy*; and the *Symptoms* of it are, eating Ulcers in the Throat or Palate, and filthy Sores in other Parts of the Body, having near Resemblance to those of the *Pox*.

This unclean Disease often yields to Dr. *Papa*'s Remedy; or at least may be kept under by it.

PAPA's REMEDY.

Take 1 Ounce of the Bark of *Suinack Root*, 1 Ounce of *inner Bark* of *Spanish Oak*; boil these together in 2 Quarts of *Water*, till the *Decoction* be very strong. Of this Liquor drink a full Pint, Milk-warm, and immediately after it Half a Pint, quite cold; and it will give you a powerful *Vomit*.

The next Morning take Half a Pint of the same Drink warm, and the same Quantity again in the Evening; and continue so doing for 6 Weeks or 2 Months; only the *Vomit* must be repeated every seventh Day. In the mean Time *gargel* your Throat, and wash all your Sores and Ulcers with the same warm *Liquor*, which ought to be made fresh every 2 Days. Besides all this, you must chew the *Suinack Root* very often, and swallow the healing *Juice*.

Every Night, before you go to rest, take 2 *Pills* made of *Turpentine* and *Deers Dung*, in equal Quantities.

P O X.

The *Pox* may be cured exactly in the same Manner; and because the Symptoms are much the same, it is very probable the One was a Graft of the other. The pious *Spaniards* catch'd it from their *Negro* Mistresses in the *West-Indies*, and had the Honour of propagating it from thence to all the rest of the World.

In

In both Cafes confine yourfelf altogether from eating Flefh, and from ftrong Drink, and be very careful of catching Cold. To avoid this Misfortue, eat feldom of frefh Pork, which breeds very grofs Humours ; live not too near a Swamp ; nor ever venture upon ftrange Women, efpecially not on *Ethopians.*

C A N C E R.

Another woful Cafe is a *Cancer,* which fome difpairingly imagine to be incurable ; tho' bleffed be GOD, there have been fome Inftances of Succefs, by the Method hereafter mentioned. In the mean Time, it ufually begins with little hard lumps, or fwellings in the Breaft, Lip, or other glandulous Part of the Body. Thefe afterwards break into painful Sores, which eat farther and farther, till at laft they reach fome large Veffel, or mortal Part.

In this Cafe the Patient muft fubmit, in the firft Place, to have the hard Lump cut clean out, fo foon as he is convinc'd it is a *Cancer.* And, for curing the Wound, he can't do better than make Ufe of the following *Balfam :* He muft boil 6 Ounces of *Saffafras Root,* and as much *Dogwood Root* in a *Gallon* of *Water,* till it be waited to a Pint, and having ftrained it off, muft drench a Pledget therein, and apply it warm to the Sore, renewing it every Day : And if he will have the Patience to continue this for fome Time, I can affure him he will not be the firft that has been bleft with Succefs.

Let him drink *Saffafras Tea* every Morning, live temperately upon light and innocent Food, and abftain intirely from ftrong Liquor. The Way to prevent this Calamity, is to be very fparing in eating frefh Pork, to forbear all falt and high-feafon'd Meats, and live chiefly upon the Garden, the Orchard and the Hen-houfe.

R H E U M A T I S M.

A *Rheumatifm* is a wandering Pain that fhifts from one Joint or Part of the Body to another, and is generally accompanied with a fmall Fever.

For this bleed 10 Ounces, the next Day vomit with *Indian Phyfick,* and the Day after that take a Purge of the fame. After all this, boil a Shin of Beef in a Gallon of Water, till one Half be wafted. Put into what remains a Pound of *Garlick,* and ftew it till it comes to 3 Pints. Then ftrain it again, and take a Quarter of a Pint, blood warm, Morning and Evening for 3 Days, and you will find Relief.

As

As this Distemper happens by a violent Cold, great Care should be taken to prevent the unhappy Cause.

G O U T.

I shall next say something of the *Gout*, which I observe with Pleasure to be grown less frequent in the Country, than in the Time of our Fathers. It makes itself known with a Vengeance, by a painful Inflammation in some of the Joints, especially of the Hands and Feet.

It would be great Presumption, after so many vain Attempts, for me to recommend any other Remedy for this obstinate Distemper, than a strict and severe Temperance, both in eating and drinking. Nevertheless, I am not so hard hearted as to deny my Patient any Kind of fresh and plain Food, that agrees with his Stomach : All I intreat of him, is to confine himself religiously to a moderate Quantity. Nor can he do better, than to follow the Example of *Cornera*, a noble *Venetian*, who tied himself down to 12 Ounces of Eatables, including Bread, and 14 Ounces of Drink, in the 24 Hours. He stuck close to this short Allowance, using moderate Exercise ; and, from being a Cripple by the *Gout*, recovered his Health, and his Strength, to a Wonder : And having found so much Benefit by these Rules, pursued them strictly to the End of a very long and happy Life.

Nor are these Weights so scanty as they may seem to be to some keen Stomachs ; but, upon a fair Trial, they will be found sufficient to give Strength to the Body, Chearfulness to the Heart, and Vigour to all the Faculties of the Soul. And, besides these happy Effects, they will do more : They will place you above the Influence of the Stars ; and make you able to subdue your Passions, to the Empire of a cool and unclouded Understanding.

The same Temperance that cures this Distemper, will certainly not fail to prevent it ; make you live a great while, and very easy while you do live.

BITE *of a* RATTLE SNAKE.

If any one should have the Misfortune to be bit by a *Rattle-Snake*, let him kill the *Viper* immediately, and apply its *Fat* to the Wound. This will sheathe the *Poison*, and give Time for other Remedies to expel it out of the *Blood*. The readiest Cure I know, is St. *Andrew's Cross*, which grows providential all over the Woods, during the whole Season that the *Snakes* are mischievous.

Let him take 60 Grains of the *Root* reduced to *Powder*,

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or a strong *Decoction* of the Leaves and tender Branches, and if one Dose should not finish the Cure, he must take a Second. There are other Plants growing in this Country that will answer the same Intention such as the *Fern Rattle-snake Root*, *Ginger Snake-root*, the smaller *Assa Rebecca*, *Oak of Jerusalem*, and *Dittany*; but St. *Andrew's Cross* is as powerful as any, and much easier procur'd, being the Growth of every Soil, that hath not been clear'd thro' the whole Colony. Nor is there any *Indian* Trader, but can bear Witness to its Virtue in this particular.

BITE of a MAD DOG.

For the *Bite of a Mad Dog*, which may be reckoned among the greatest of Calamities, Dr. *Mead* has communicated the following Remedy to the World which he had tried on more than 500 Persons, with great and constant Success.

The Patient as soon as possible after his Misfortune, should bleed about 10 Ounces. Then let him take of *Ash-colour'd Ground Liver-Wort*, dry'd and powder'd, Half an Ounce ; which grows on moist sandy barren Soils. He must mix with this two Drachms of powder'd *black Pepper*. Divide those into four Doses, and let him take one every Morning fasting in half a Pint of warm Milk. After this, the Patient must be plung'd over Head and Ears in very cold Water every Morning fasting, for a Month together, never staying longer than Half a Minute at a Time. When he has bathed in this Manner so long, he need go in no more than three Times a Week for a Fortnight longer, by which Time the Cure, by the Grace of God, will be happily compleated.

The *Liverwort*, should be gathered in *October*, and dry'd carefully in the Shade.

F I L M.

In Case a *Film* should grow over the Sight of the *Eye*, occasioned by a Blow, a sharp Humour, or other Accident, you may take it off, with this easy and cheap Remedy. Dry *Human Dung* in the Sun that is yellow, and of a good Consistence, and having reduced it to a very fine *Powder*, blow it through a Quill two or three Times a Day, into the *Eye*, and your Sight will be happily restored in a short Time.

S O R E   E Y E S.

Common *Sore Eyes* may be cur'd by washing them with *Breast Milk*, warm *Sage Tea*, or with *Rose Water*, taking
Care

Care in the mean time not to rub them if they itch, or ex-
pose them to the cold Air.

S P R A I N.

If by any Fall, or false Step, you should happen to sprain
a Joint, clap it into cold Water as soon as possible, and keep
it there for several Minutes. Then cover the Part all over
with a Poultis of Clay well temper'd with strong Vinegar,
which must be bound on securely. When the first grows
dry, apply another, which will probably finish the Cure
without the Expence of a *Surgeon.*

And now I mention *Surgeons*, by the good Leave of those
Gentlemen, I will recommend to my poor Countrymen an
easy Remedy for some little Complaints that fall within
their proper Province. Nor will they take it amiss, I
hope, if I endeavour to help such indigent Persons as
cannot purchase their Assistance.

B R O K E N   S H I N.

If any one therefore should break a *Shin*, or have any
other *green Wound* (which by being neglected, often comes
to be very troublesome) let him only make use of that
Balsam, which the compassionate *Samaritan* apply'd to the
Wounds of the poor *Israelite* who fell amongst Thieves.
Boil *Oil Olive* and *Wine* in equal Quantities (and if you
add a little clean *Muscovado Sugar*, it will be so much the
better) Drench a *Pledget* well in this *Balsam*, with which
cover the whole Sore, and keep it on with any sticking
Plaisters, and it will be healed in one or two Dressings. I
have likewise cur'd very bad Ulcers with it, but then I
kept the Patient to a spare and cooling *Diet*, making him
drink *Papa's* Liquor all the Time, and cleanse the Sore
with the same every Time it was dressed. In these Cases,
it need not be dressed more than once in two Days, be-
cause it should be exposed as seldom as possible to the cold
Air.

S W E L L I N G to D I S C U S S.

If you have a *Swelling* in any Part which you would
discuss, mix *powder'd Brimstone*, with the Juice of *James
Town Weed*, and thereof make an Ointment with fresh
Hogs Lard. Anoint with this twice or thrice a Day, keep-
ing the Part warm, and you will rarely fail of Success.

S W E L L I N G to B R E A K.

But if you would draw a *Swelling* to a *Head*, chew *Saf-
safras Root*, and apply it by Way of Poultis, and it will
not

not only break the *Swelling*, but cure it also in a short Time, without any other Application.

SEAR CLOTH.

If you should have a Pain in the Back, Loins, or other Part, that requires a Sear Cloth to assuage it, the most effectual One I can recommend to you, is made after the following Manner. Powder the Root of *Assa Rebecca*, *Comfry* and *Snake Root*, then mix them with as much common *Turpentine* as will make a large Plaister, which apply hot to the Part, and it will give speedy Relief.

DEAFNESS.

If any one should by Cold or other Accident become *Deaf*, let him take the *Bulb* of a large *Onion*, and scoop out a pretty deal of the Inside. Then let him fill the hollow Part half full of *Rattle-snake Oil*, and place it on a *Grid-Iron* over *live Coals*, till the *Pulp* of the *Onion* incorporate with the *Oil*. Then strain it, and going to Bed, drop two Drops into the Patient's Ear very warm. Afterwards stop it with *Cotton*, and repeat it six or seven Times, and you will have Reason to applaud the Medicine.

Thus I have run through most of the common Complaints to which the Inhabitants of this Colony are subject; and prescrib'd such innocent Cures, as will generally succeed, if timely made use of; yet am far from pretending that any of them are infallible; We all know that *Death* strikes so home in some Cases, that all *Physick* is vain. There are many Instances too, where the Diseases of our Climate have a little *Dash* of the *Pox*, the *Scurvy*, or the *Gout*; and then they need a *RATCLIFF* or a *FRIEND* to get the better of them.

In the mean Time, it may seem strange, that, among the Remedies I have prescribed, no honourable mention is made of *Mercury*, *Opium*, or the *Peruvean Bark*, which have almost obtain'd the Reputation of *Specificks*. I acknowledge the powerful Effects of these Medicines, but am persuaded they ought to be administered with the greatest Skill and Discernment. And, as I write only for the Service of the Poor, who are wholly left to judge for themselves, I was fearful of putting such dangerous Weapons into their Hands.

A

An Index of Diseases mentioned in Every Man his own Doctor.

The foregoing Distempers are the most fatal and troublesome we are afflicted with in this Country. I have been as short as I could, lest I might lose the Benefit of the Proverb, which says, *The shortest Follies are the best.* The Remedies I have prescrib'd, are almost all of our own Growth,

Growth, there being no more than 5 or 6 foreign Medicines; and they so very cheap, that if I happen not to cure my Patient, I am sure I shall not ruin him. And surely, no Man can say, he dies very unfairly, when there is so little to pay, either to the *Doctor* or *Apothecary*. Besides, I have another Thing to recommend me, that I don't cram my Patients with too much *Physick*. My Prescriptions are generally single, and not compounded, like a *Spanish Oleo*, of all Sorts of Ingredients, which must certainly confound and defeat the Virtues of each other. Neither do I ransack the Universe for outlandish Drugs, which must waste and decay in long Voyages; nor import the Sweepings of the Shops, which I am sure are decay'd; but am content to do my Execution with the Weapons of our own Country.

An Index of Ingredients made use of.

Thefe Ingredients every Mafter of a Family may eafily provide himfelf with ; as he fhould alfo with a *Lancet*, a *Glyfter-pipe*, and a *Syringe*, that he may not be at a Lofs in his Diftrefs ; and fpend that Time in running after Remedies that ought to be made ufe of in applying them ; Delays being never fo dangerous, as in the Care we ought to take of the Sick.

The Printer to the Reader wifheth Health.

THIS Book, intitled, *Every Man his own Doctor*, was firft printed in *Virginia*, for the Ufe of which Colony it was written by a Gentleman refiding there. Great Numbers have been diftributed among the People both in *Virginia* and *Maryland*, and 'tis generally allowed that Abundance of Good has been thereby done. And as fome Parts of *Penfylvania*, the *Jerfeys*, and the Lower Counties on *Delaware*, by the Lownefs and Moiftnefs of their Situation, are incident to the fame Kind of Difeafes, I have been advifed to print this Book here, for the Ufe

and

and Benefit of thofe People in thefe Countries, as live at too great a Diftance from good Phyficians. It is neceffary, however, to give the Reader this one Caution, that the *Ipecacuana* or *Indian Phyfick*, fo frequently prefcribed by the Author, is much weaker in *Virginia*, than that which grows in *Pennfylvania*; fo that whereas he prefcribes 80 Grains for a vomiting Portion, and 70 for a Purge; 12 Grains of our *Indian Phyfick*, or *Ipecacuana*, will be fufficient for a Vomit, and 10 for a Purge: There is another Sort which comes to us from *Europe*, and is to be found in the Apothecaries Shops, of which 30 or 32 Grains is commonly given for a Vomit, and 27 for a Purge, which will work moft Conftitutions fufficiently.

POSTSCRIPT.

A Phyfician in *Virginia* has lately publifhed an Effay on the *Pleurify*; in which he difcovers a Method of treating that fatal Diftemper, that he fays he always found to fucceed. The principal Part of the Cure depends on the Ufe of a Simple that begins to be known in this Country by the Name of *Rattle Snake Root*, being the fame which the *Indians* ufe in curing the Bite of that venemous Reptile. The Method which the Author practifes and recommends, is as follows.

" Let the Patient firft have 10 Ounces of Blood taken
" from the Arm of the well Side or Foot, if both Sides
" are effected; and every 6 Hours 3 Spoonfuls of the
" following Tincture is to be given, the firft Dofe imme-
" diately after, and continued till the Symptoms abate.

" Take of the *Rattle Snake Root* 3 Ounces, *wild Va-*
" *lerian Root* an Ounce and a Half, let them be well
" bruifed in a Mortar, then mix them with a Quart of old
" *Canary*, and digeft in a proper Veffel in a Sand Heat
" for 6 Hours, afterwards decant for Ufe.

" Let fifteen Drops of *Balfam Capivi*, and as many of
" *Sal Volatile Oleofum*, be given in a little ordinary Drink,
" twice between each Dofe of the Tincture, beginning
" with the firft Dofe two Hours after the Tincture; and
" give the 2d Dofe 2 Hours after.

" Let the ordinary Drink be a Tea made of *Marfh-*
" *mallow Roots*, always given warm.

" If the Patient has been ill fome Days before any
" Thing

" Thing administred, the *Balsam* is to be continued for
" some Days after a considerable Amendment.

" Blood letting is to be repeated the second Day, and
" in the same Quantity as the first, if the Patient is not
" much better, or the same Day, unless something better
" in four Hours: But such is the Efficacy of this Medi-
" cine, that there is seldom Occasion. The Symptoms
" generally abate considerably in 24 Hours, and the Re-
" covery certain."

But because every One may not have Conveniency for
preparing this Tincture, nor have the other Medicines
mentioned at Hand, and don't live within the Reach of
a Physician, it is necessary to acquaint the Reader with
what the Author adds further, viz. " A Decoction of
" the *Rattle Snake Root* alone in Spring Water, three
" Ounces to about one Quart; together with Pectoral
" Teas sweetened with Honey, *will prove effectual* with-
" out *any Thing else*, if the Patient has been let Blood as
" soon as taken, and this Decoction immediately given
" afterwards."

This is to be understood of the genuine *Pleurisy* or *Pe-
ripneumony* attended with a Fever.

As for the other Disease, which often personates a
Pleurisy in these Parts, the Symptoms of which are, that
the Patient is cold in a *somniferous* State, and sometimes
convulsed.

In this Case the Author omits Blood-letting as pernici-
ous; but says the Tincture aforesaid is as effectual here
as in the genuine *Pleurisy*, only advises that the *Rattle
Snake Root* and *Valerian* be in equal Quantities.

Advice to a young Tradesman, written by an old One.
To my Friend A. B.

*As you have desired of me, I write the following Hints,
which have been of Service to me, and may, if observed,
be so to you.*

REMEMBER that Time is Money. He that can
earn Ten shillings a Day by his Labour, and goes
abroad, or sits idle one Half of that Day, tho' he spends
but Sixpence during his Diversion or Idleness, ought not
to reckon that the only Expence; he has really spent, or
rather thrown away Five shillings besides,

Remember

Remember that CREDIT is Money. If a Man lets his Money lie in my Hands after it is due, he gives me the Interest, or so much as I can make of it during that Time. This amounts to a considerable Sum where a Man has good and large Credit, and makes good use of it.

Remember that Money is of a prolifick generating Nature. Money can beget Money, and its Offspring can beget more, and so on; Five Shillings turned, is Six: Turn'd again, 'tis Seven and Three-pence; and so on 'til it becomes an Hundred Pound. The more there is of it, the more it produces every Turning, so that the Profits rise quicker and quicker. He that kills a breeding Sow, destroys all her Offspring to the thousandth Generation. He that murders a Crown, destroys all it might have produced, even Scores of Pounds

Remember that Six Pounds a Year is but a Groat a Day. For this little Sum (which may be daily wasted either in Time or Expence unperceiv'd) a Man of Credit may, on his own Security, have the constant Possession and Use of an Hundred Pounds. So much in Stock briskly turn'd by an industrious Man, produces great Advantage.

Remember this saying, *That the good Paymaster is Lord of another Man's Purse.* He that is known to pay punctually and exactly to the Time he promises, may at any Time and on any Occasion raise all the Money his Friends can spare. This is sometimes of great use; therefore never keep borrow'd Money an Hour beyond the Time you promised, lest a Disappointment shut up your Friend's Purse for ever.

The most trifling Actions that affect a Man's Credit, are to be regarded. The Sound of your Hammer at Five in the Morning, or Nine at Night, heard by a Creditor, makes him easy six Months longer. But if he sees you at a Billiard Table, or hears your Voice at a Tavern, when you should be at Work, he sends for his Money the next Day. Finer Cloths than he or his Wife wears, or greater Expence in any Particular than he affords himself, shocks his Pride, and he duns you to humble you. Creditors are a Kind of People, that have the sharpest Eyes and Ears, as well as the best Memories of any in the World.

R

Good-

Good-natur'd Creditors (and such one would always chuse to deal with if one could) feel Pain when they are oblig'd to ask for Money. Spare 'em that Pain, and they will love you. When you receive a Sum of Money, divide it among 'em in Proportion to your Debts. Don't be asham'd of paying a small Sum because you owe a greater. Money, more or less, is always welcome; and your Creditor had rather be at the Trouble of receiving *Ten Pounds* voluntarily brought him, though at ten different Times or Payments, than be obliged to go ten Times to demand it before he can receive it in a Lump. It shews that you are mindful of what you owe; it makes you appear a careful as well as an honest Man; and that still encreases your Credit.

Beware of thinking all your own that you possess, and of living accordingly. 'Tis a Mistake that many People who have Credit fall into. To prevent this, keep an exact Account, for some Time, of both your Expences and your Incomes. If you take the Pains at first to mention Particulars, it will have this good Effect; you will discover how wonderfully small trifling Expences mount up to large Sums, and will discern what might have been, and may, for the future, be saved, without occasioning any great Inconvenience.

In short, the Way to Wealth, if you desire it, is as plain as the Way to Market. It depends chiefly on two Words, INDUSTRY and FRUGALITY; *i. e.* Waste neither Time nor Money, but make the best Use of both. He that gets all he can honestly, and saves all he gets (necessary Expences excepted) will certainly become rich: If that Being who governs the World, to whom all should look for a Blessing on their honest Endeavours, doth not in his wise Providence otherwise determine.

The general Division of the EARTH and SEA.

THE Terrestrial Globe may be divided into two Parts, the Earth and the Sea. The Earth may be divided into known and unknown Lands. The latter includes such Parts as are yet undiscovered, of which there are doubtless many; as also those that are but partly known by visiting the Coast. The known Land is divided into two great Continents, the Old containing Europe, Asia, and Africa, and the New containing America.

EUROPE has Denmark, Norway, Sweden, Muscovy or Russia, towards the North ; France, Germany, Poland, Bohemia, and Hungary, about the Middle ; Spain, Portugal, Italy, and Turkey in Europe, on the South.

ASIA has that Part of Russia next to Europe, and Tartary belonging to the Muscovites in the North, Turkey in Asia, Persia, Great Tartary and China, about the Middle ; and Arabia the Mogul's Country, and the Peninsulas on both Sides the Ganges in the South.

AFRICA has Barbary, Egypt, Nigritia, Guinea, Nubia, Abyssinia, &c. on this Side the Equator ; and Congo, Zanquebar, Monoemugi, Monomotapa, and the Hottentots beyond it.

AMERICA is divided into the North and South. The North contains New France, Nova Scotia, New England, Maryland, Pennsylvania, Virginia, Carolina, Georgia, New Mexico, and California. The South contains Terra Firma, Peru, Brasil, the Land of the Amazons, Paraguay, Chili and Terra Magellanica.

The Islands of Europe in the Ocean are Great Britain, Ireland, Iceland, and the Islands of the Baltic. In the Mediterranean are Majorca and Minorca, Malta, Sicilly, Sardinia, Corsica, Candy, Corfu, and the Islands of the Archipelago.

The Islands of Asia in the Ocean are the Maldives, Ceylon, Sumatra, Java, Borneo, called the Isles of Sunda ; the Moluccas, the Philippines, the Isles of Japan and Formosa. Add to these the Isle of Cyprus in the Mediterranean, and Rhodes.

The Islands of Africa are the Canaries, the Islands of Madeira, the Cape De Verd Islands, St. Thomas, Ascension, St. Helena, &c. all these lie on the West. On the East are the Isles of Madagascar, Comoron, and Bourbon ; with a great many small ones on the Coast of Zanquebar. Likewise Zocotora, on the Arabian Coast, near Cape Guardefui.

The Islands of America on the East, are those of Fernando de Naronna, near the Coast of Brasil ; and Saxemberg, Pepys, and Malouinies off the Magellanic Coast. On the West Coast near Peru lie those of Cocos and the Gallopegas. On the Coast of Chili, St. Felix, and Juan Fernandez. And farther in the Ocean the Isles of St. Paul, of the Marquis of Mendoza, Fernando Quiros and

Solomon.

Solomon. The Isles on the South are those of Terra del Fuego, including the Islands Van Staten. On the East the lesser Isles of the Straits of Magellan. On the North and East Side are Newfoundland, Bermuda, the Lucayas or Bahama Islands. The Antilles or Caribbee Islands, and many others.

The Sea is divided into the Exterior, or that which surrounds the Continent, and the Interior, or that which is contained within the Continent. The former is divided into 1. The North or Frozen Ocean; 2. The India Sea, or Ocean; 3. The Oriental Ocean; 4. The Western Ocean; 5. The Southern Ocean; 6. The Great South Sea, or Pacific Ocean.

The Seas within the Continent are the Mediterranean, the Baltic, the White Sea or Gulph of Russia; the Black or Euxine Sea; the Sea of Zabach; or the Sea of Azoph, formerly called Palus Mæotis, near the Black Sea; the Sea of Marmora, otherwise called the Propontis; the Caspian Sea, which is properly only a Lake; the Red Sea, or the Arabian Gulph; the Persian Gulph between Arabia and Persia; the Vermillion Sea near California; the Gulph of St. Lawrence, near Newfoundland; the Gulph of Mexico; the Sea of Koreo, and the Sea of Kamschatka.

Of the principal Isthmuses, Gulphs, Straits, Lakes and Rivers.

AN Isthmus is a Part of the Earth shut in between two Seas, and joins one Land to another, of which there are two very confiderable in Europe, viz. The Isthmus of Corinth, which joins the Morea to Greece, and the Isthmus of Precop, which unites Little Tartary with the Crimea.

The most remarkable Isthmus in Asia is that of Tenaterim, which joins the Peninsula of Malacca with the Kingdom of Siam. In Africa there is likewise only one, and that is the Isthmus of Suez, which unites Asia with Africa. They formerly attempted to make a Canal from one Sea to the other; but the Design miscarried. In America there is the Isthmus of Panama, which separates North America from the South.

The Ocean forms eight remarkable Gulphs. There are three in Europe, which have the Name of Seas; the Mediterranean,

diterranean, the Baltic Sea, and the White Sea. There are three in Afia, the Gulph of Bengal, the Perfian Gulph, and the Arabian Gulph or Red Sea. There are two in America, the Gulph of California and the Vermillion Sea.

The moft famous Straits are Hudfon's Straits in the North Part of America, and the Straits of Magellan in the South. The leffer Straits are thofe of Gibraltar, between Africa and Europe, and which permit the Ocean to enter into the Mediterranean: The Straits of Babelmandle, between Afia and Africa, and which join the Red Sea to the Ocean: The Straits called the Sound, which unite the Baltic with the German Ocean.

The moft famous Lakes are the Ladoga and Onega in the Confines of Mufcovy. The Cafpian Sea; to the Eaft of which lies the Lake Aral, but lately known to be of great Extent, and feems to be miftaken by fome for the Cafpian Sea; the Lake Baikal; thefe laft are in Afia. To which add feveral Lakes in North America, of which the fuperior or upper Lake is the principal.

The principal Rivers in Europe are the Thames in England, the Torneo in Sweden, at the Bottom of the Gulph of Bothnia; the Volga in Ruffia, which runs into the Cafpian Sea; the Danube, which rifes in Germany and runs thro' Turkey in Europe into the Black Sea; the Don or Tanais in Ruffia, which runs into the Sea of Azoph; the Nieper which rifes in Poland, and empies itfelf into the Black Sea; the Rhine in Germany; the Loire in France; the Po in Italy; and the Tagus in Spain.

In Afia there is the Euphrates, which rifes in the Mountains of Armenia, and runs on the Eaft Side of the Defarts of Arabia, till it comes to the Place where Babylon formerly ftood, and uniting itfelf with the Tigris foon after it paffes by Bafra and falls into the Perfian Gulph; the Tigris, which has its Source a little lower, and running towards the South paffes by Moful and Bagdad, after which it unites its Stream with the former, and empties itfelf into the Perfian Gulph; the Indus, this runs from North to South, dividing Perfia from the Mogul's Country, and falls into the Indian Ocean; the Ganges likewife runs from North to South on the Eaft Side of the Mogul's Country, and falls into the Gulph of Bengal. The

The chief Rivers in China are the Kan-ho or the Yellow River, and the Kyang or the Yang tse Kyang, both which run thro' the Country from West to East. The chief Rivers in Siberia are the Irtish, the Obi, the Tobol, the Jenisca, and the Selinga; and the principal in Great Tartary is the Segalian.

The chief Rivers in Africa are the Nile, the Gambia, the Senega, and the Zaire. The Nile rises in the Mountains of Abyssinia, and runs from South to North thro' Ethiopia and Egypt into the Mediterranean. The excessive Rains in the South Parts cause it to overflow the lower Parts of Egypt once a Year, which renders it a very plentiful Country for Corn.

There are two considerable Rivers in North America, the River of St. Lawrence, and the Mississippi, besides many others, which are navigable, in our English Plantations. In South America the River of the Amazons, which is supposed to be greatest River in the World, and the Paraguay or la Plata.

Of the different Religions of the World, and their Extent.

ALL the Religions in the World may be reduced to four, the Pagan, Jewish, Christian, and Mahometan, to which some add the Natural.

The Pagan Religion is owing to the Inventions of Men, and consists of various Kinds of Idolatry, and extravagant Opinions; it teaches the worshipping of Images, various Sacrifices, the Agency of Demons, and many other superstitious Practices. This was the Religion of the ancient Greeks and Romans, the People of America, and various other Parts. It is now extended over half Asia, five or six Parts of Africa, and nineteen in twenty of America.

The Persians formerly worshipped the Sun and Fire, but since Mehometanism is become the prevailing Faith, there are but few who profess this ancient Religion. However, some are established on the Borders of the Countries near to Persia, and in the Peninsula on this Side the Ganges. Nevertheless these Idolaters pretend they believe in one God, and that the Fire is his Image. They are called Gaurs or Gebres.

The Religion of the Brachmans was formerly the principal in the Mogul's Country, and in the Peninsula on this Side the Ganges, even till Mahometanism was established.

blished. It is now mostly cultivated by the natural Inhabitants. It is still prevalent in the other Dominions of this Peninsula, and in the Countries of the Rayas, who keep their Ground against the Mogul. These Rayas are little Sovereign Princes, who do Homage to the Great Mogul, or pay him Tribute.

The Brachmans or Gymnosophists were very severe Philosophers, who, according to Porphyry, made Profession of a kind of Monastic Life. The Bramins who succeeded them are Indian Priests, who are of the ancient Religion of the Banians, who are Idolaters of the Indies. They believe the Transmigration of Souls. The Bramins and all their Followers have a great Veneration for a Cow, and they think themselves happy when they die holding one of their Tails.

The Chinese in general, acknowledge no other God but Heaven. However, there are several Sects among them. That which is called the learned Sect, tho' they pay no regard to Idols, are said to pay a Homage to the Sun, Moon, and Stars. Others have Idol Temples, and yet both one and the other have a great Regard for Confucius.

The most extensive Form of Religion is that of Fo, for this prevails over Thibet, all the Western Tartary, as well as China, and most of the Indian Islands. It pretends to Revelation, and teaches all the Superstitions above-mentioned.

The Worship of the Sun before Christianity, was of all Religions the most general; it was even found in America, for the People of Peru worshipped the Sun, as also those of Florida; and some in New Mexico worship him till this Day. Some other Nations of America are thought to adore some imaginary Demon, and to use Conjurations by such Means; but however Travellers may have been imposed upon by their fantastic Ceremonies, there are now very few in Protestant Countries, who believe any Thing of these diabolical Stories.

The Jewish Religion has its Name from the Jews, a People of Syria in Africa, and was instituted by Moses about 3198 Years ago. It was intended to restore natural Religion, then decayed in the World, It consists chiefly in the Belief of one God: But the Jews were such a stubborn unbelieving Race of Mortals, that no Miracles could
prevent

prevent them from relapsing into Idolatry, till they had endured the Babylonish Captivity, after which they seem to be pretty firm in their Belief, till they were divided into various Sects. The abstaining from Hog's Flesh was probably a temporary Law given to them, because it is bad for the Leprosy. But they strictly adhering to the Letter, hold it in the utmost Abhorrence even at this Day. It is now the prevailing Religion of no Country, the Jews being no longer a Nation, but scattered over all Parts of the Earth: But more particularly Europe, the South Part of Asia, and the North Part of Africa, where they are very numerous.

The Christian Religion takes its Name from Jesus Christ, who was born in Judea 1770 Years ago, and was crucified as a Malefactor, about the Age of 33, for teaching his Doctrines. It abolishes the Jewish Priesthood, and changes the Day of Worship from Saturday to Sunday. The moral Part of it surpasses all other Religions in the World, it being the highest Improvement of the Law of Nature. Christianity extends almost all over Europe, and several Parts of America, as the established Religion, where the Europeans have any Possession, and it is professed by different People in the Turkish Dominions, and is dispersed through several Regions of Asia and Africa. But it is so degenerated in many Places, that there remains nothing but the Name, particularly in Abyssinia, Armenia, and the Countries to the East of the Black Sea. In Europe it is divided into three principal Branches, the Roman Catholic, the Greek Church, and the Protestants. The Greeks are divided into three Sects, those that have renounced the Supremacy of the Pope of Rome, those that are Jacobites, Cophtes or Eutychians, and those that are Nestorians. The Protestants are divided into several Branches, the Lutheran, the Episcopal, the Calvinist, the Presbyterian, the Baptist, Quakerism, and Socinianism, and many other Sects of lesser Note.

The Mahometan or Mahomedan is derived from Mahomet in Arabian, who published it as a Revelation 622 Years after Christ, and by Means thereof became Sovereign of Arabia. This Religion differs very little from that of the Jewish, except in acknowledging Mahomet to be the Prophet of God, their frequent Ablutions and

other

other Ceremonies. They have changed the Day of Worſhip from Saturday to Friday.

Mahometaniſm is the chief Religion in the Turkiſh Empire, and the only one in Arabia. It is ſpread all over Perſia, the Mogul's Empire, and many of the Indian Iſlands on the Northern and Eaſtern Coaſts of Africa, with many of the Inland Countries. Some affirm it ſix Times more extended than Chriſtianity. However it has not penetrated into America.

Of the different Languages, *and the different* Colours, *of the* Inhabitants *of the Earth.*

THE moſt general Languages are the Latin, the Teutonic, the Celtic or Keltic, the Sclavonian, the Greek, the Turkiſh, the Eaſtern Syriac, the Arabic, the Tartarian, the Manchew, the Chineſe, the Malayan, the Ethiopic. As for the Languages of Africa and America, they are ſo many it would be a great Labour to reckon them up.

As to the Extent of theſe Languages, the Latin is a dead Language; but the Italian is a Corruption of it as well as the Spaniſh and French. The Teutonic Language is ſpoken in Germany and Scandinavia. The Engliſh is a Mixture of Latin, Teutonic, and Norman. The Daniſh, Dutch, Flemiſh, and Swediſh, are derived from the German.

The Sclavonian has produced the Dalmatian, Boſnian, Albanian, Servian, Pulgarian, Moldavian, Bohemian, Sileſian, the Poliſh, Ruſſian, Mingrelian, and Circaſſian. The Turkiſh prevails over Turkey, and a great Part of the Eaſtern Tartary. The Eaſtern Syriac or Chaldaic is the Mother of the Weſtern Syriac, the Hebrew, the Arabic, and the Abyſſinian Laguages. The Malayan prevals over a great Part of the farther Indies and the Iſlands. The Chineſe is ſpoken throughout China. The Manchew prevails in Eaſtern Tartary. The Celtic ſeems to be the original and moſt general Language of Europe. It is ſtill preſerved in Wales, Bretagny, and the North of Scotland, and particularly in Ireland.

The Greek made a Progreſs wherever that Empire prevailed. It is now ſpoken in the South Part of Turkey in Europe, that is in ancient Greece, the Iſlands of the Archipelago, and Natolia, but much corrupted.

The COLOURS of the Inhabitants of the Earth are four, 1. White; 2. Tawny; 3. Black; and 4. Red.

The Inhabitants of Europe are White, as well as Part of the Afiatics, that is Natolia, Armenia, Georgia, the Northern Provinces of Perfia, and about the Cafpian Sea, Grand Tartary, and the Northern Parts of China.

The Tawny or Brown inhabit a great Part of Barbary, Egypt, Zara, Zanguebar. In Afia they dwell in Syria, Diarbeker, Arabia, the Southern Part of China, the Iflands of Ceylon, the Maldive, Sunda, the Moluccas, and the Philippines; the Indians are of this yellowifh tawny, and thofe that are more brown, are only made fo by the fcorching Heat of the Sun.

The Inhabitants of Africa are generally Black, except thofe firft mentioned; fo likewife are thofe of fome Parts of Afia, New Guinea, and New Holland. The Americans are Red from one End of that vaft Continent to the other; and if they appear in a more dufky Complexion in fome Parts, it is becaufe they daub themfelves with Bear's Greafe and other unctious Subftances.

Mankind differ much in their Figure and Shape; they are generally reduced to four Kinds; the Ethiopians have a particular Afpect well known to all. But out of thefe we muft except Little Tartary and the North Part of Ruffia. However, the Inhabitants of Barbary have Features not unlike thofe of the People of Europe; as alfo Turkey in Afia, and the Indians on this Side the Ganges, have fome Refemblance.

The fecond Sort are the Chinefe, the Tartars, the Inhabitants of the Peninfula beyond the Ganges, the Iflands of Japan, the Philippines, the Moluccas and the Ifles of Sunda; thefe have flat Nofes, the Vifage extremely flat, and the Eyes oval or narrow.

The third Kind comprehends the Laplanders and the Sawayoids, who are long-vifaged, frightful, and have fomewhat of the Afpect of a Bear.

The fourth are the Blacks of Africa, who have woolly Heads, flat Nofes, and thick Lips; their Tongues, and the Infide of their Mouths, are as Red as Coral.

The fifth are the Americans, who are without Beards, and without Hair on any Part of their Bodies except the Head, where it is long and black, when they will fuffer it to grow; they go generally naked, fome quite fo, and
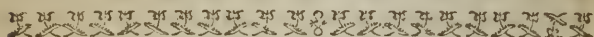
others

others only cover thofe Parts which Decency requires them to hide. It is the fame in Africa from Cape de Verd to the Cape of Good Hope, in the new difcovered Countries to the South, and many other Places of the World.

I know many Authors have afferted, that the Americans pull up their Beards by the Roots, in which they only copy one another; but who can imagine that in fuch a vaft Country as America, all the People, with one Confent, fhould agree to pluck out their Beards? Befides, it is no very eafy Matter; and thofe who think otherwife, had beft try. However, as I have had an Opportunity to obferve them, I can affirm the contrary. Befides, Lahonton, who lived among them, declares the fame, as well as Charlevoix, who travelled quite through North America.

It has greatly puzzled the Learned to know by what Means America came to be peopled. Some have affirmed they came from Phœnicia, becaufe they worfhip the Sun, and others have imagined they are derived from China. But this would be wonderfully ftrange, becaufe the Chinefe deal much in Words of one Syllable, and the Americans have Words of a prodigious Length. As for Inftance, near the River of the Amazons, the Word Poettararrorincouroac fignifies three; which is the higheft Number their Arithmetic arrives at, otherwife what a Trouble it would be to tell Twenty. Their Languages indeed are various, but none of them, that we know of, have any Analogy with thofe of the old World. Befides, had People come Volunteers into America, they would certainly have taken fome ufeful Animals along with them; for before the Conqueft of America, by the Spaniards, there were no Horfes, Cows, Sheep, Hogs, Affes, &c. which are in Plenty elfewhere. But they had many Creatures, which are not to be found in any other Part of the World. Some fay they have Lions, but this is only taken from Report, for no Eye-Witnefs can be produced, who has ever feen any. The Confideration of thefe Things influenced Charlevoix to affirm America was peopled by the Grand-Children of Noah: And the prefent Bifhop of Clogher believes it was inhabited before the Flood, and that the People were faved by the peculiar Care of Divine Providence; others have afferted, that thefe White, Brown, Red, and Black People muft all have had different Parents originally,

originally, and created at different Times ; but this is contrary to the Holy Scriptures, which make Adam and Eve to be the first Parents of all Mankind. But those who believe there were Men before Adam, from Cain's going to dwell in the Land of Nod, which seemed full of Inhabitants, will make no Scruple to subscribe to this Opinion.

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Putman was born July 24

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Lodiwick Putmanstevens
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of our Lord
July the 30 1771

Samuel Dillington,
His Book. Anoa 1772

Stul Not this Book
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name

the 3 Sept 1774

Book taken apart, leaves deacidified
with magnesium bicarbonate. Folds
reinforced, leaves mended and sup-
ported with lens tissue where weak.
Resewed on linen cords with new all-
rag end paper signatures & hand
sewed headbands. Rebound in quarter
Russell's oasis morocco with hand
marbled paper sides & vellum corners.
Leather treated with potassium
lactate & neat's foot oil & lanolin.

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June